ASAD

Answers

GRAPHS

H+I

$y = +2x^2$

$y = -2x^2 - 1$

$y = -1$

Type 1: Example

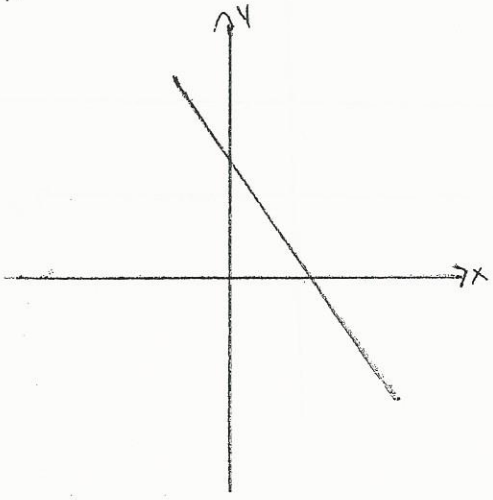
Functions ***h*** and ***i*** are defined below:

① $h(x) = a_1x^2$ where a_1 is > 0 ① $y = 2x^2$

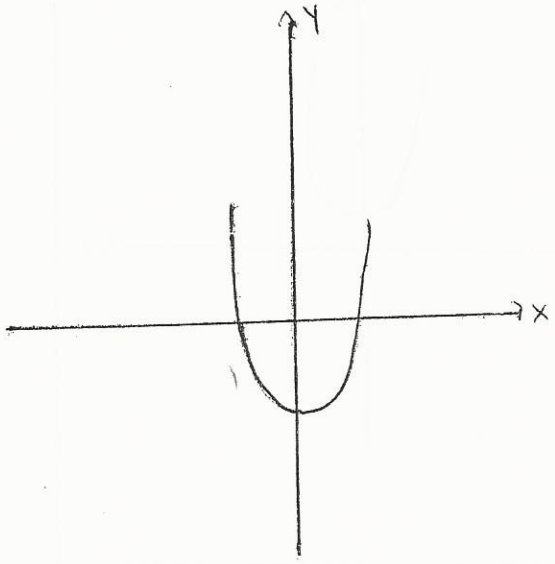
② $i(x) = a_2x^2 + c$ where a_2 is = $-a_1$ and $c < 0$ ② $y = -2x^2 - 1$

Which one of the following graphs could represent h + i ?

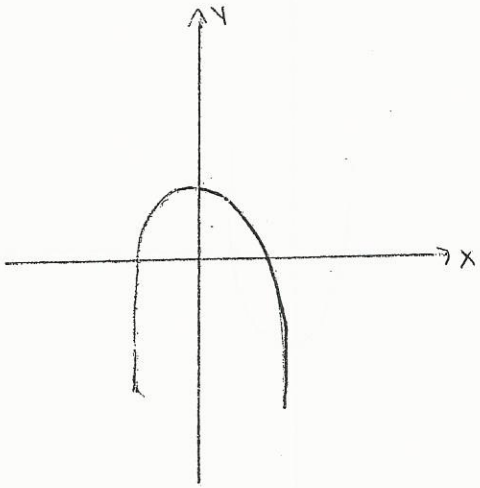
A)



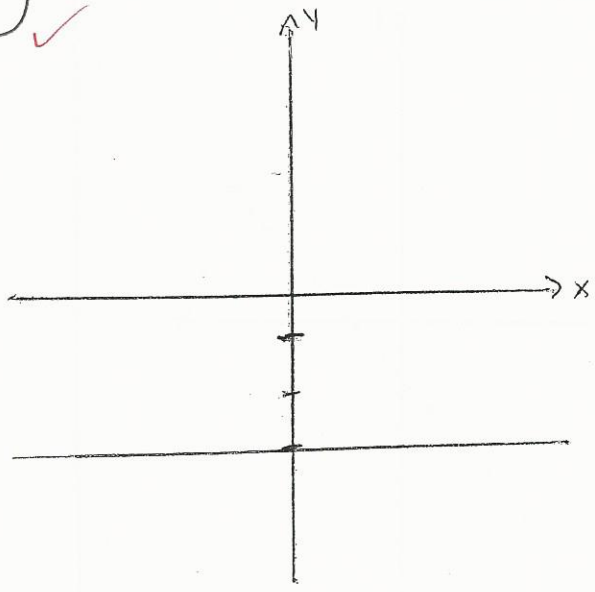
B)



C)



D) ✓



$= \frac{-2x^2}{2x^2 + 1}$

$y = +1$

Type 1

Practice Exercises:

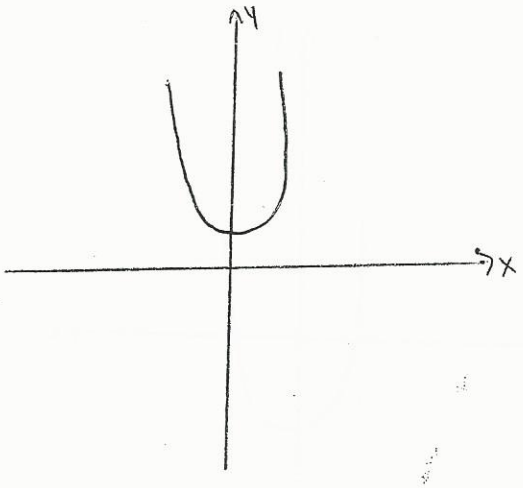
1. Functions ***a*** and ***b*** are defined below:

$a(x) = a_1x^2$ where a_1 is < 0 $= -2x^2$

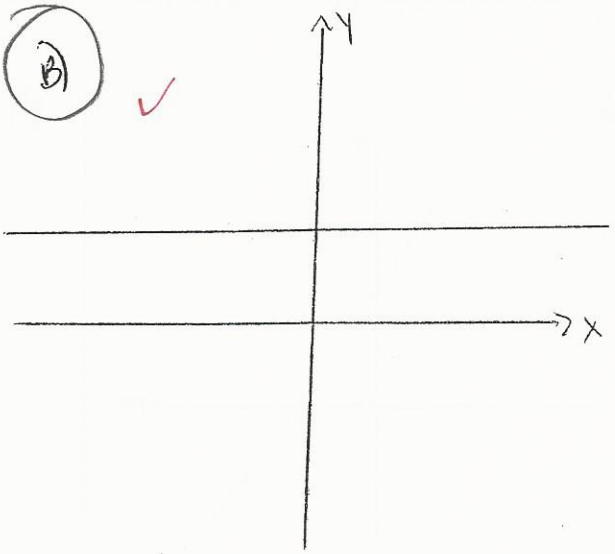
$b(x) = a_2x^2 + c$ where a_2 is $= -a_1$ and $c > 0$ $= 2x^2 + 1$

Which one of the following graphs could represent a + b?

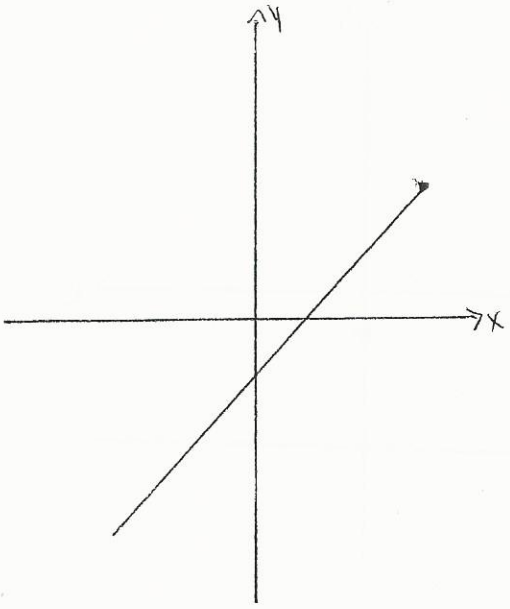
A)



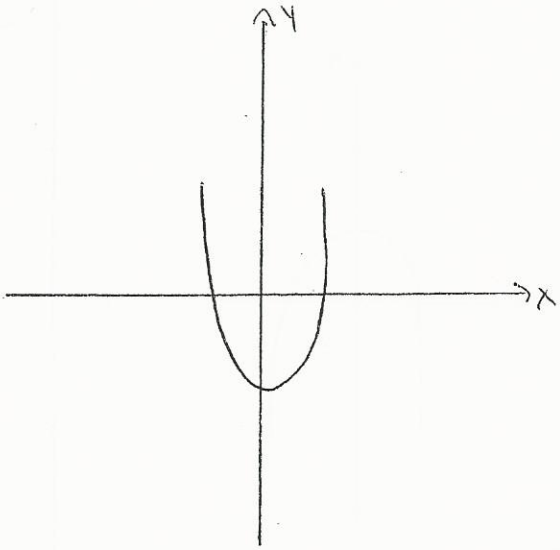
B) ✓



C)



D)



$y = \frac{2x^2 - 1}{-2x^2}$

$y = -1$

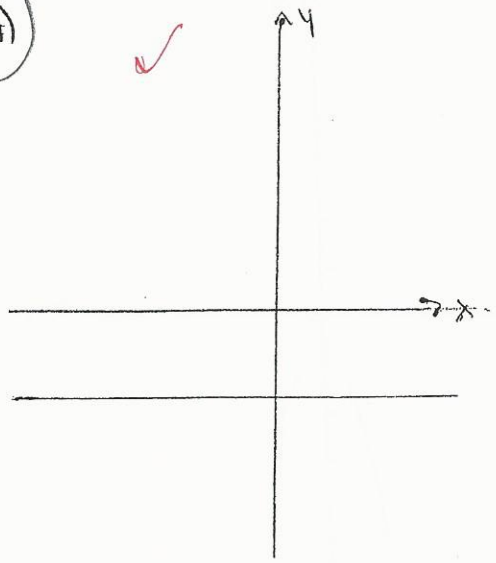
2. Functions ***d*** and ***e*** are defined below:

$d(x) = a_1x^2 + c$ where a_1 is >0 and c < 0 ① $y = 2x^2 - 1$

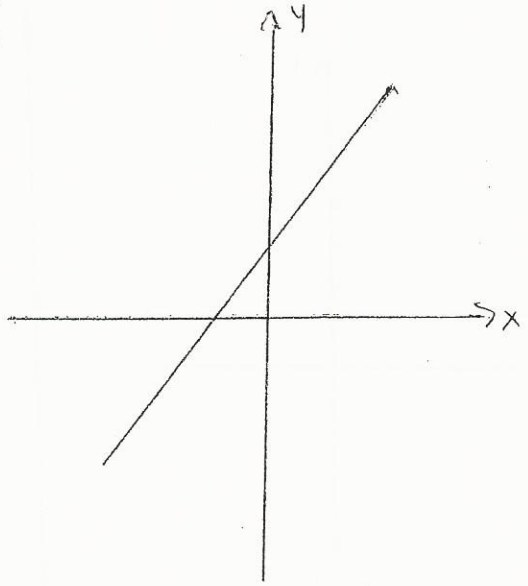
$e(x) = a_2x^2$ where a_2 is $= -a_1$ ② $y = -2x^2$

Which one of the following graphs could represent d + e?

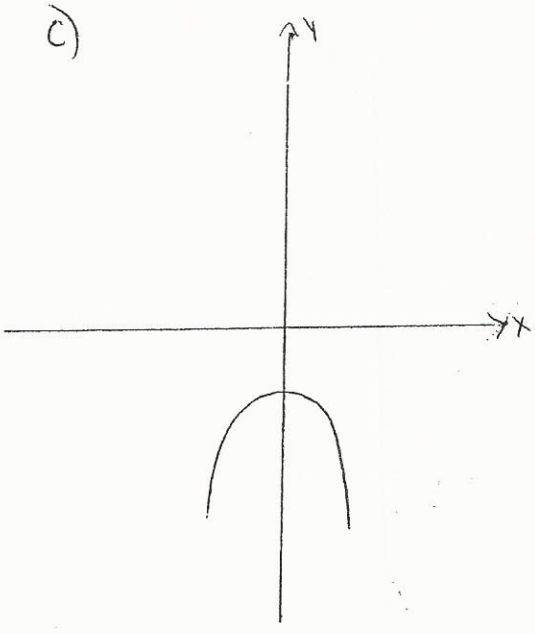
A)



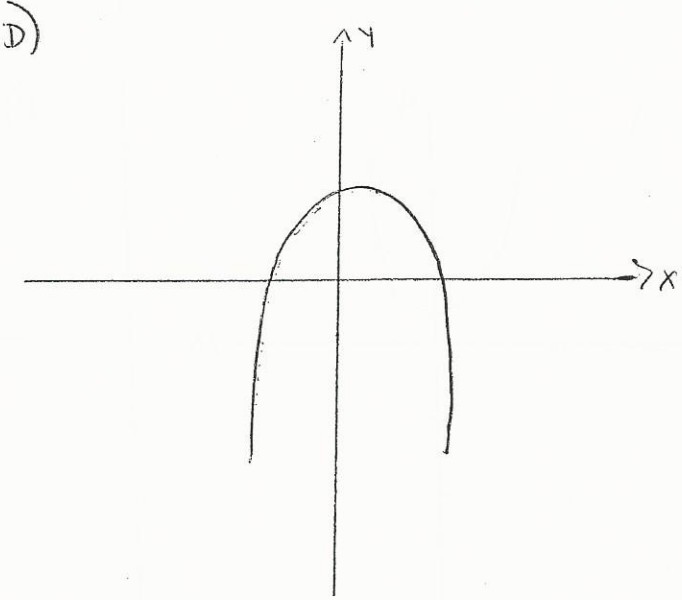
B)



C)



D)



$y = \frac{-2x^2 - 1}{-2x^2}$

$y = -4x^2$

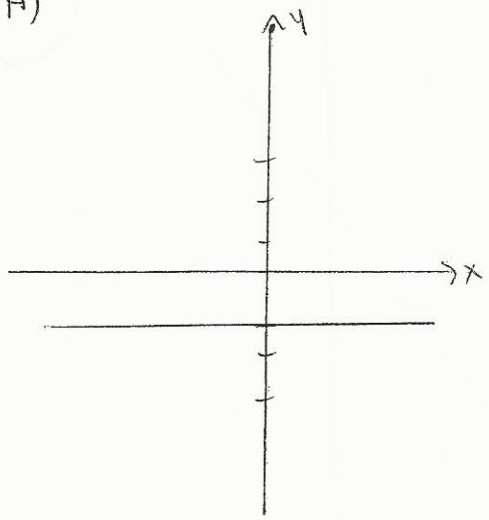
3. Functions ***j*** and ***k*** are defined below:

$j(x) = a_1x^2 + c$ where a_1 is <0 and $c < 0$ ① $= -2x^2 - 1$

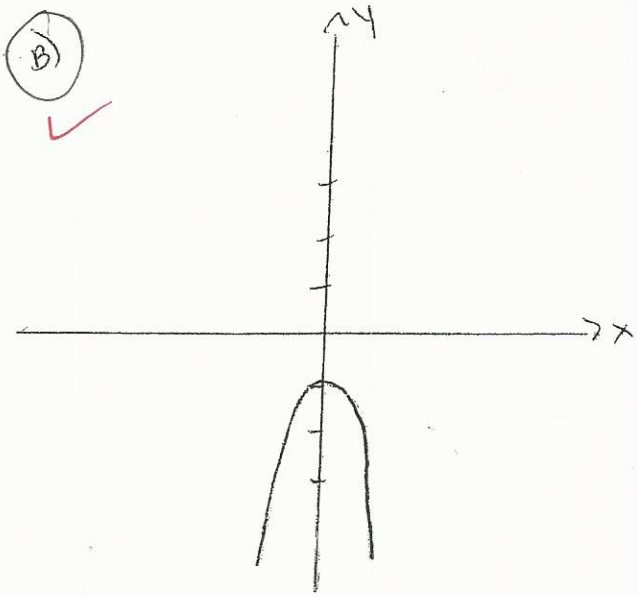
$k(x) = a_2x^2$ where a_2 is $= a_1$ ② $= -2x^2$

Which one of the following graphs could represent j + k?

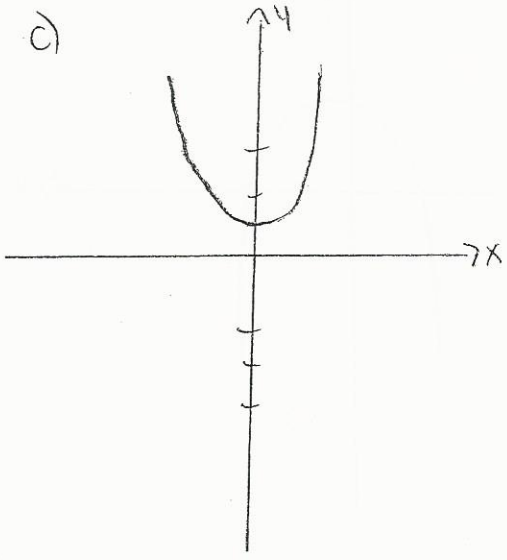
A)



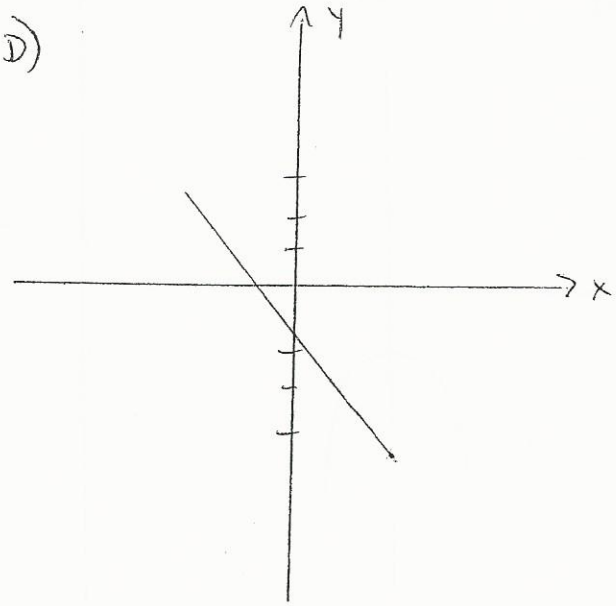
B) ✓



C)



D)



$y = \frac{2x^2+1}{2x^2+1}$

$y = 4x^2 + 1$

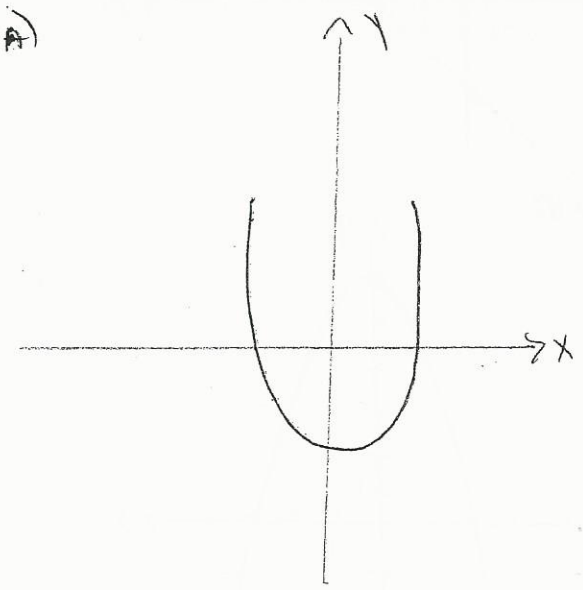
4. Functions ***g*** and ***h*** are defined below:

$g(x) = a_1x^2 + c$ where a_1 is >0 and c>0 ① $y = 2x^2 + 1$

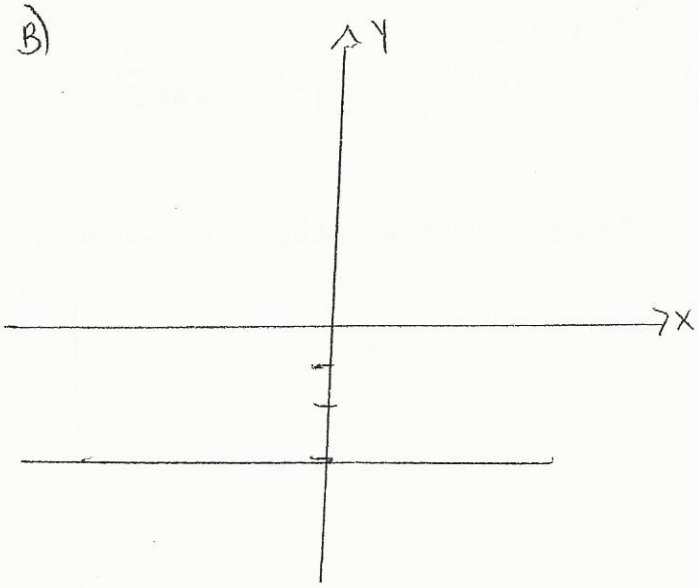
$khx) = a_2x^2$ where a_2 is = a_1 ② $y = 2x^2$

Which one of the following graphs could represent g + h?

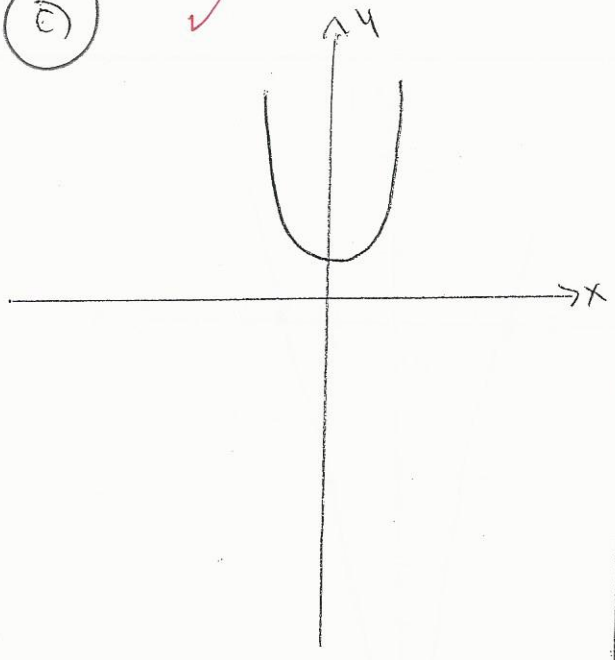
A)



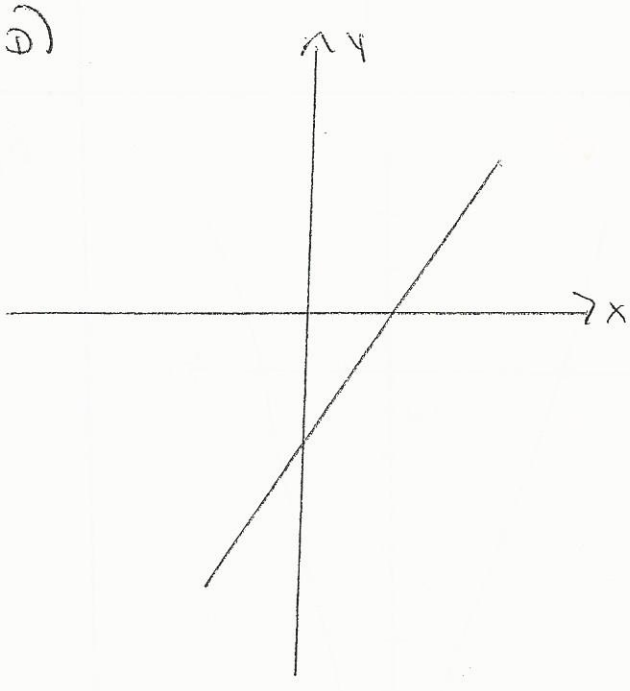
B)



C) ✓



D)



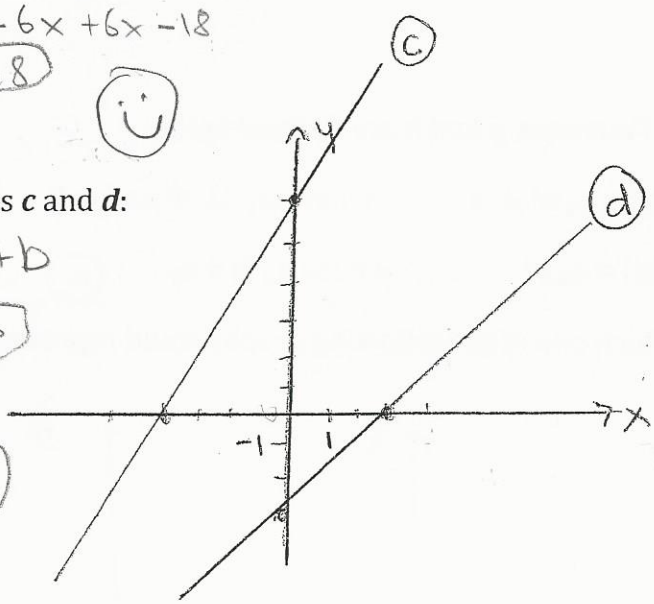
$= (2x+6)(x-3)$

$= 2x^2 - 6x + 6x - 18$

$= 2x^2 - 18$

Type 2: Example

The following graph represents functions ***c*** and ***d***:



C $(-3,0)$ $(0,6)$ ⑥

$y = mx + b$

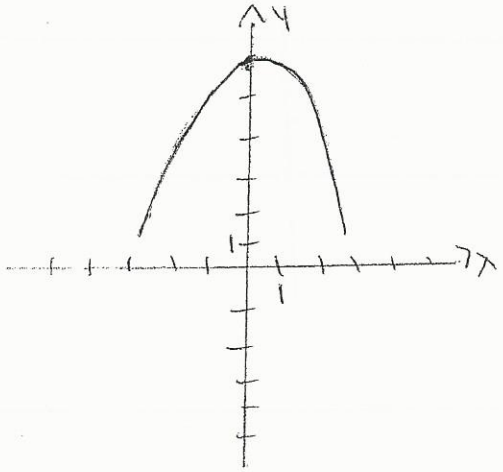
$m = \frac{y^2 - y^1}{x^2 - x^1} = \frac{6-0}{0+3} = \frac{6}{+3}$ $= +2x+6$

D $(0,-3)$ $(3,0)$ ⑥

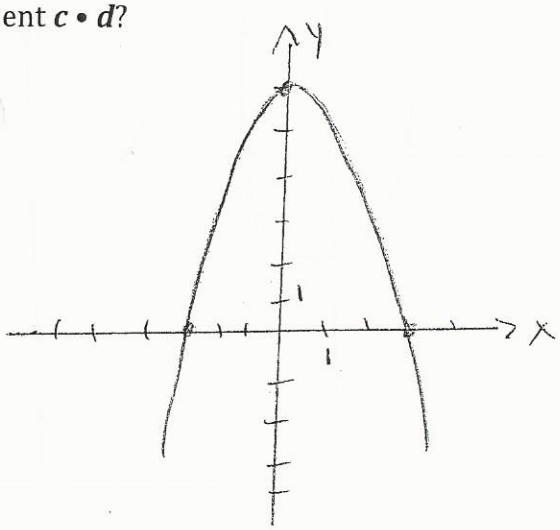
$m = \frac{y^2 - y^1}{x^2 - x^1} = \frac{0+3}{3-0} = \frac{3}{3}$ $= 1x-3$

Which one of the following graphs could represent $c \bullet d$?

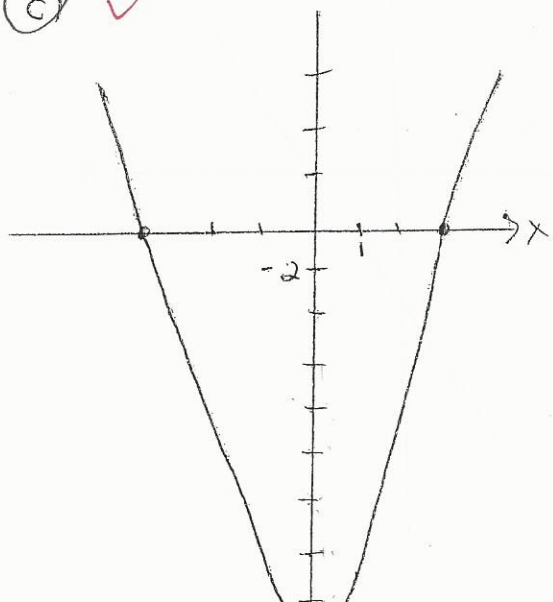
A)



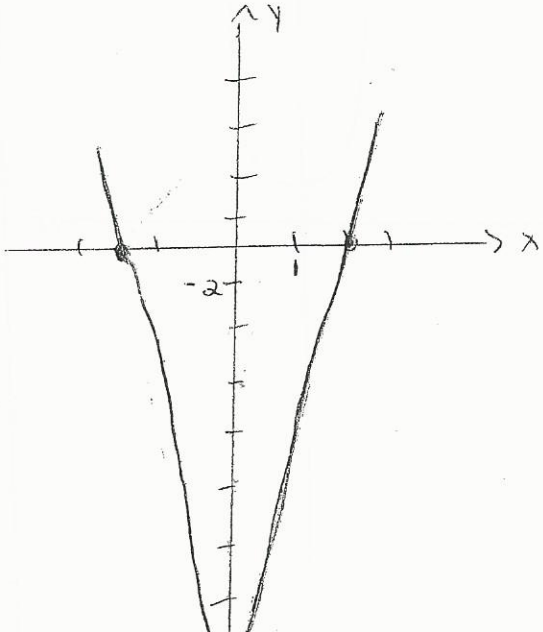
B)



C) ✓



D)



$y=(2x-2)(-x+2)$

$y=-2x^2+4x+2x-4$

$y=-2x^2+6x-4$

(a) ↓ (b) ↓ $y=-4$

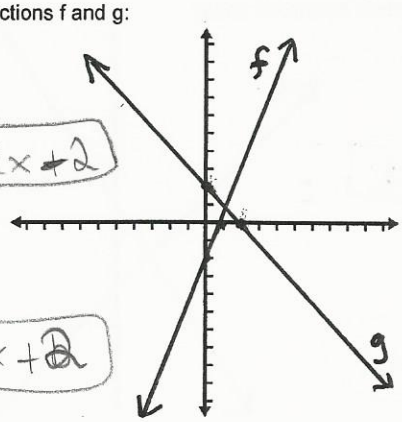
x value of vertex

$= \frac{-b}{2a}$

$= \frac{-6}{2(-2)}$

$= \frac{-6}{-4}$ $x=1.5$

1. The following graph represents functions f and g:



f (0, 2) (1, 0)

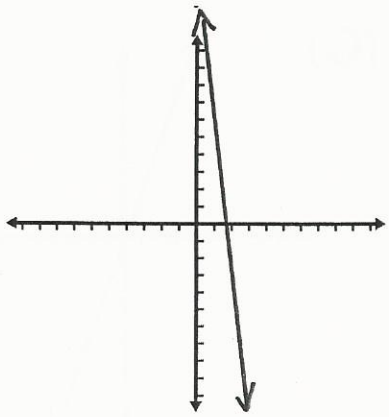
$m=\frac{y_2-y_1}{x_2-x_1}=\frac{0+2}{1-0}=\frac{+2}{1}$ $=+2x+2$

g (0, 2) (2, 0)

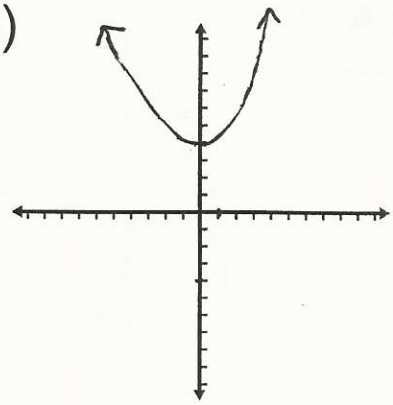
$m=\frac{y_2-y_1}{x_2-x_1}=\frac{0-2}{2-0}=\frac{-2}{2}$ $=-x+2$

Which one of the following graphs could represent f • g ?

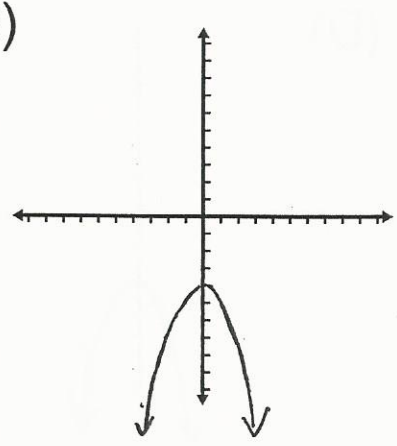
(A)



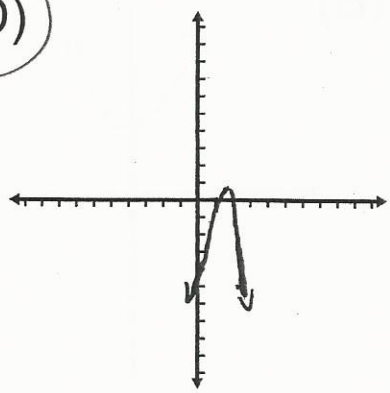
(C)



(B)



(D)



$y = (1x-4)(2x+1)$

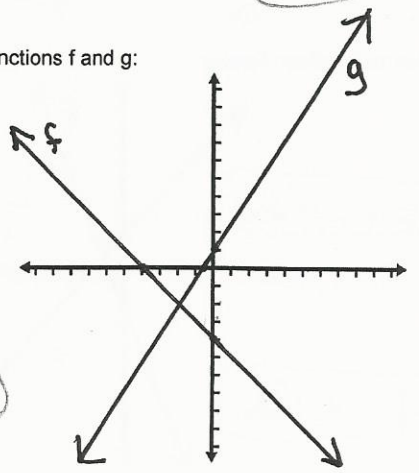
$= 2x^2 + 1x - 8x - 4$

$= 2x^2 + 7 - 4$ → $y = -4$ $= \frac{-b}{2(a)}$

$= \frac{7}{2(4)}$

$= \frac{7}{4}$ $= 1.75$

2. The following graph represents functions f and g:



$f(-4,0)$ $(0,-4)$

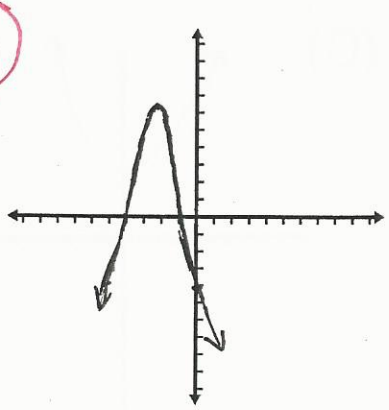
$m = \frac{-4-0}{0+4} = \frac{-4}{+4} = -1x-4$

$g(0.5,0)$ $(0,1)$

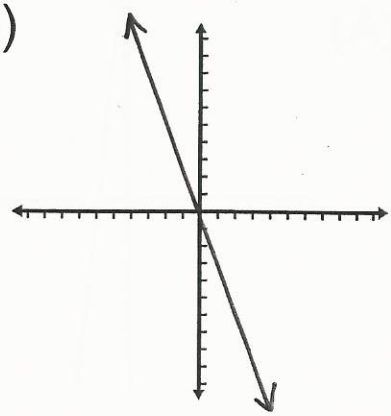
$m = \frac{1-0}{0+0.5} = \frac{1}{0.5} = 2x+1$

Which one of the following graphs could represent f • g ?

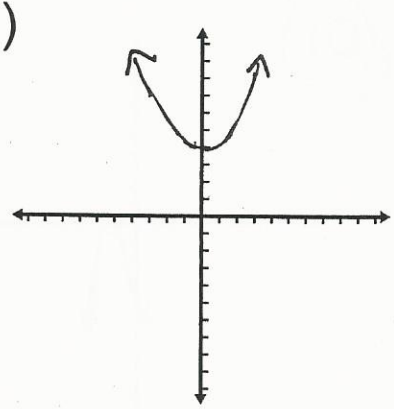
(A)



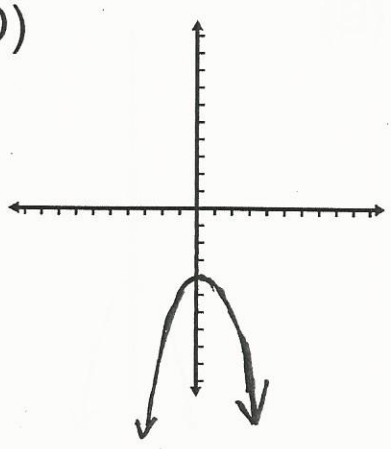
(C)



(B)



(D)



$y = (0.5x+3)(2x+2)$

$y = 1x^2 + 1x + 6x + 6$

$y = 1x^2 + 7x + 6$

a b c

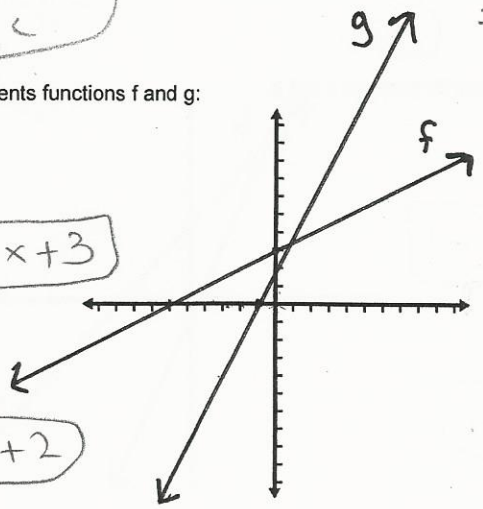
$x = \frac{-b}{2(a)}$

$= \frac{-7}{2(1)}$

$= \frac{-7}{2}$ x value $= -3.5$

y intercept +6

3. The following graph represents functions f and g:



f (-6, 0) (0, 3)

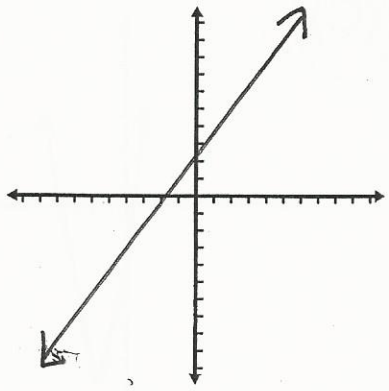
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-0}{0+6} = \frac{3}{6} = \frac{1}{2}x + 3$

g (-1, 0) (0, 2)

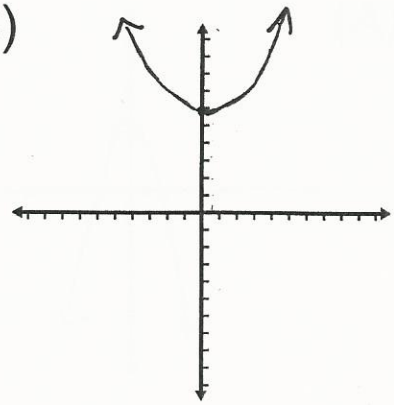
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-0}{0+1} = \frac{2}{1} = 2x + 2$

Which one of the following graphs could represent f • g ?

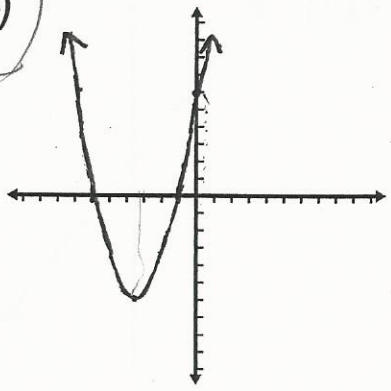
(A)



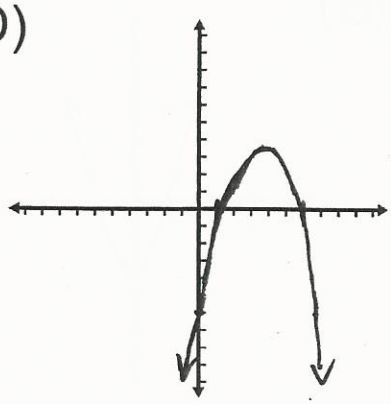
(C)



(B) ✓



(D)



$y = (2x-1)(-1x+4)$

$y = -2x^2 + 8x + 1x - 4$

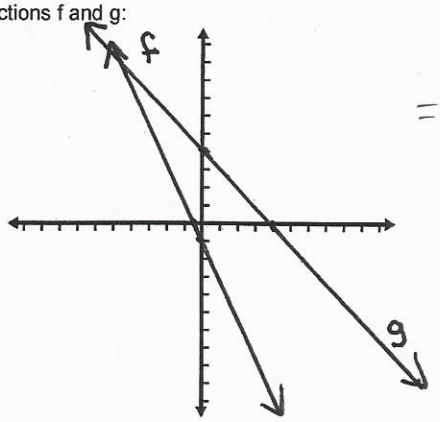
$y = -2x^2 + 9x - 4$ $\rightarrow y-4$

☹

$= \frac{-b}{2(a)}$

$= \frac{-9}{2(-2)} = \frac{-9}{-4} = 2.25$ ✗

4. The following graph represents functions f and g:



$f(0.5,0)\ (0,-1)$

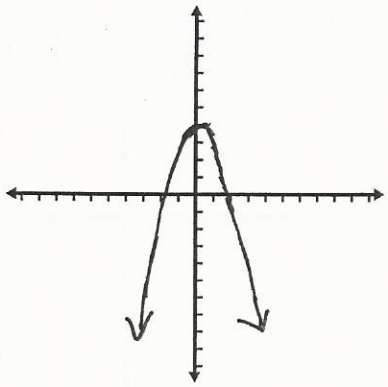
$m = \frac{-1-0}{0-0.5} = \frac{-1}{-0.5} = 2x-1$

$g(4,0)\ (0,4)$

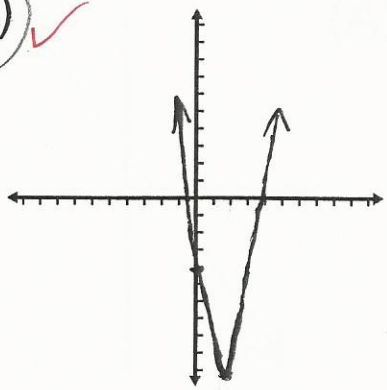
$m = \frac{4-0}{0-4} = \frac{4}{-4} = -1x+4$

Which one of the following graphs could represent f • g ?

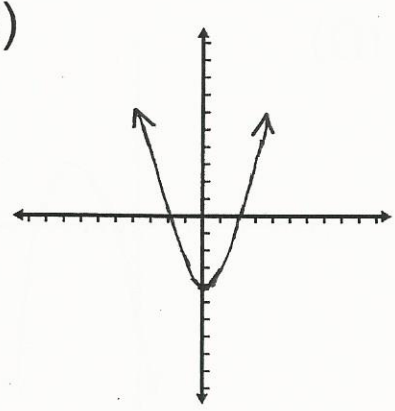
(A)



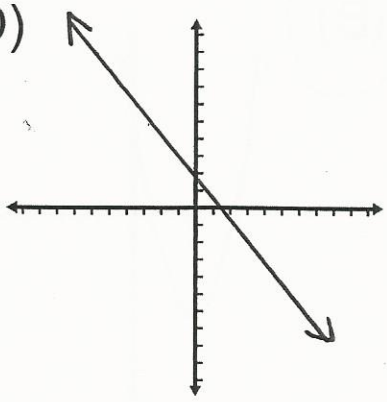
(C) ✓



(B)



(D)



$3-(-1x-3)$

$3+1x+3$

$y=1x+6$

Type 3: Example

Functions a_1 and a_2 are defined below:

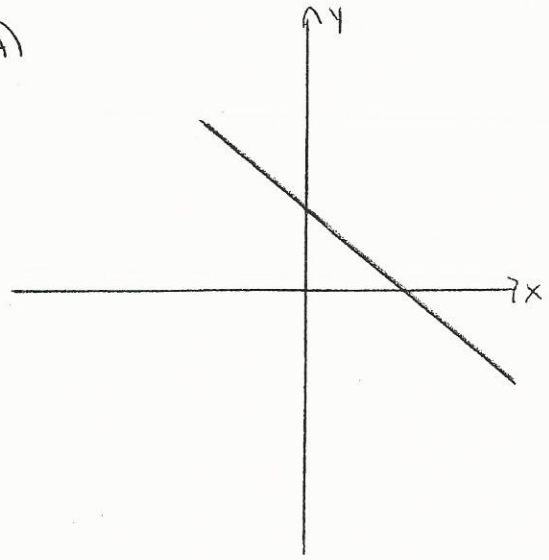
− slope $a_1(x) = ax + b_1$ where $a < 0$ and $b_1 < 0$ ① $y=-1x-3$

$a_2(x) = b_2$ where $b_2 = -b_1$ ② $y=3$

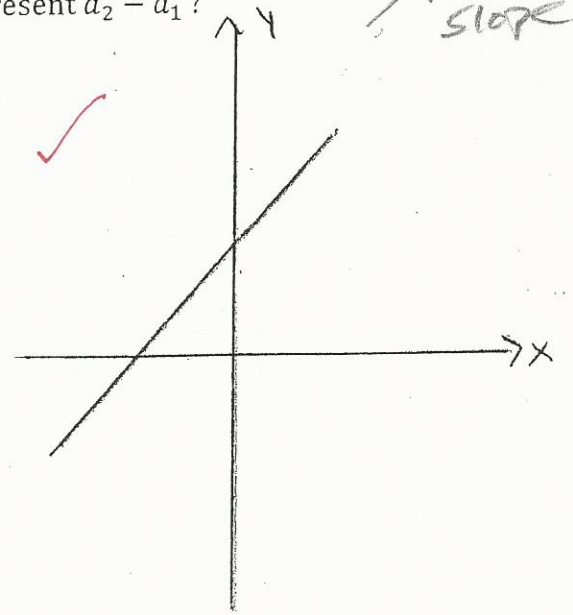
Which one of the following graphs could represent $a_2 - a_1$?

positive slope

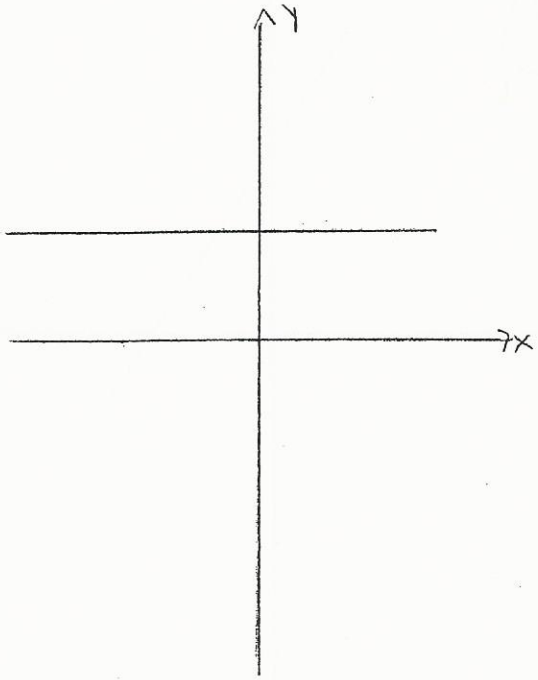
A)



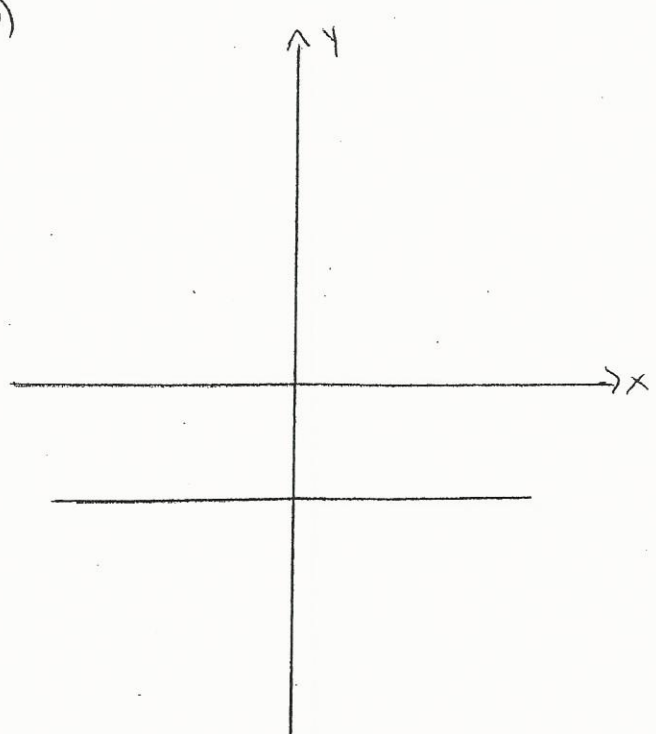
B) ✓



C)



D)



$= -1x + 2 - -2$

$= -1x + 4$ → y intercept
- slope

Type 3: Practice

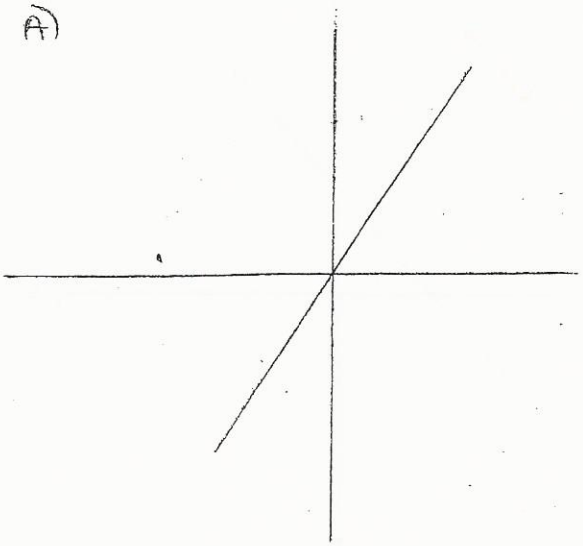
1. Functions b_1 and b_2 are defined below:

$g_1(x) = ax + b_1$ where $a < 0$ and $b_1 > 0$ ① $y = -1x + 2$

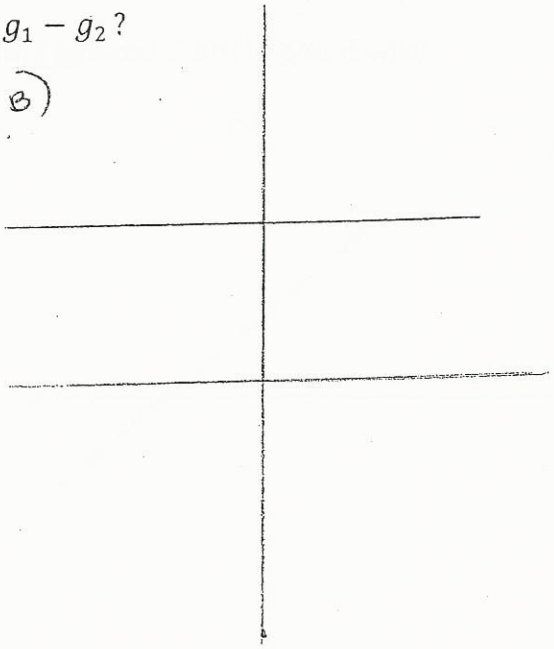
$g_2(x) = b_2$ where $b_2 = -b_1$ ② $y = -2$

Which one of the following graphs could represent $g_1 - g_2$?

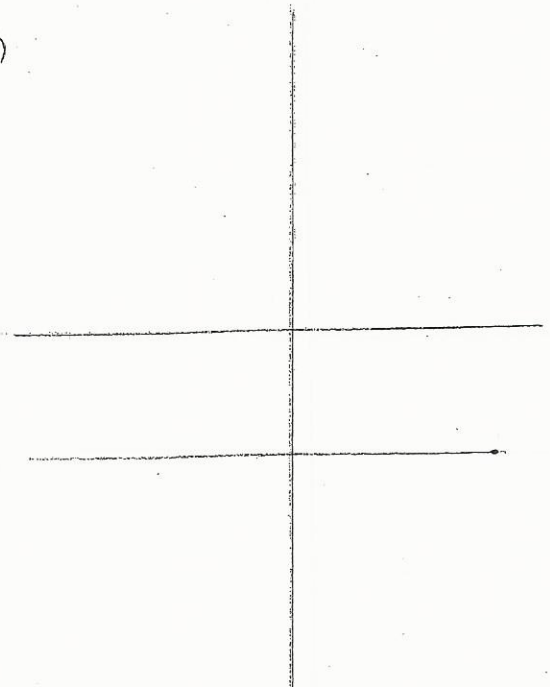
A)



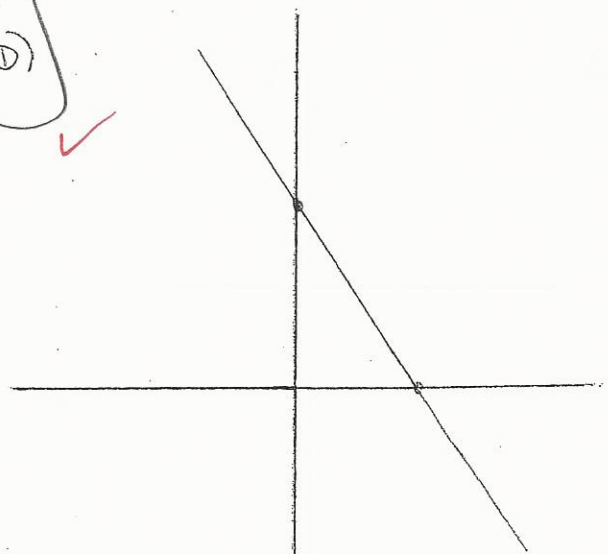
B)



C)



D) ✓



$y = 1x + 2 - -2$

$y = 1x + 4$

0 → y intercept

slope = 1

Type 3: Practice

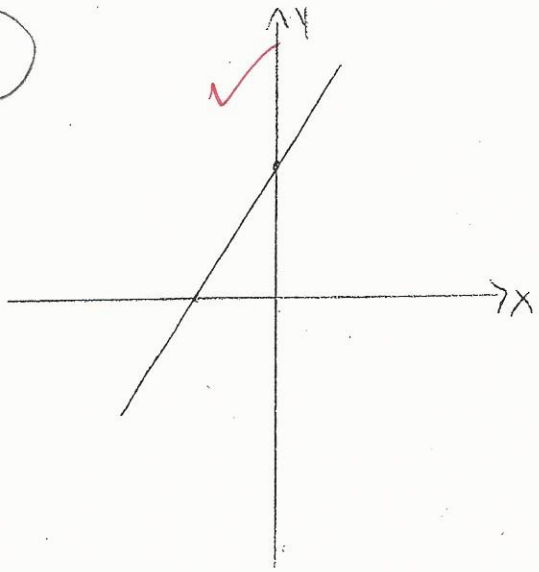
2. Functions h_1 and h_2 are defined below:

$h_1(x) = b_1$ where $b_1 = -b_2$ ① $y = -2$

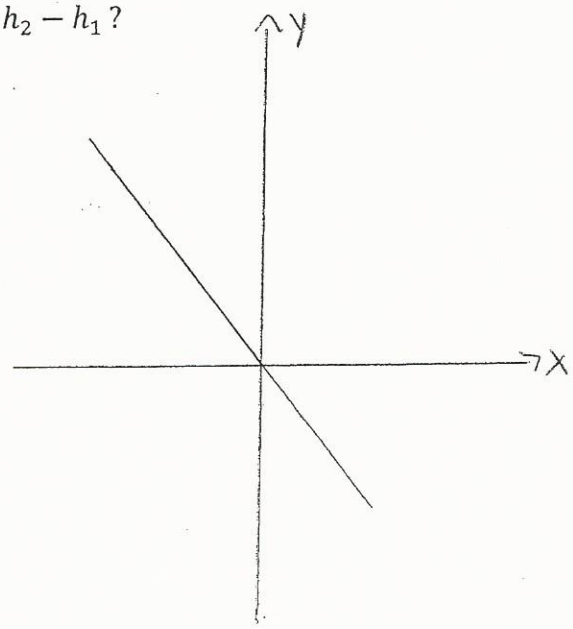
$h_2(x) = ax + b_2$ where $a > 0$ and $b_2 > 0$ ② $y = 1x + 2$

Which one of the following graphs could represent $h_2 - h_1$?

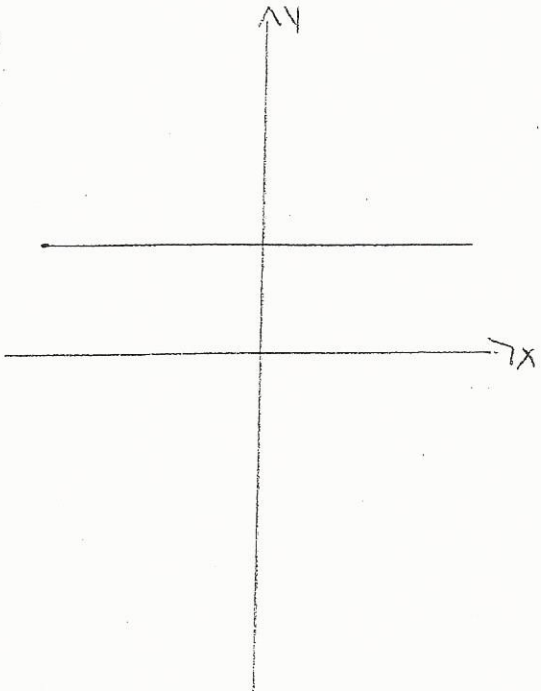
A)



B)



C)



D)