Functions Question Type A

e.g.1   A function is described by the following rule: $f(x) = \dfrac{-2x}{7} + 1$

    a) Determine over which interval this function is positive.

       Answer: _____

    b) Determine the rate of change of this function.

       Answer: _____

I. You try:

1.   A function is described by the following rule: $f(x) = \dfrac{-4x}{5} + 2$

    a) Determine over which interval this function is positive.

       Answer: _____

    b) Determine the rate of change of this function.

       Answer: _____

2.   A function is described by the following rule: $f(x) = \dfrac{-3x}{5} + 2$

    a) Determine over which interval this function is positive.

       Answer: _____

    b) Determine the rate of change of this function.

       Answer: _____

3. A function is described by the following rule: $f(x) = \dfrac{-5x}{6} + 3$

   a) Determine over which interval this function is positive.

   Answer: _____

   b) Determine the rate of change of this function.

   Answer: _____

4. A function is described by the following rule: $f(x) = \dfrac{-3x}{4} + 2$

   a) Determine over which interval this function is positive.

   Answer: _____

   b) Determine the rate of change of this function.

   Answer: _____

5. A function is described by the following rule: $f(x) = \dfrac{-2x}{5} + 3$

   a) Determine over which interval this function is positive.

   Answer: _____

   b) Determine the rate of change of this function.

   Answer: _____

e.g. 2 A function is described by the following rule: $f(x) = \dfrac{2x}{3} - 1$

    a) Determine over which interval this function is negative.

    Answer: _____

    b) Determine the rate of change of this function.

    Answer: _____

II. You try:

1.   A function is described by the following rule: $f(x) = \dfrac{3x}{4} - 1$

    a) Determine over which interval this function is negative.

    Answer: _____

    b) Determine the rate of change of this function.

    Answer: _____

2.   A function is described by the following rule: $f(x) = \dfrac{4x}{3} - 2$

    a) Determine over which interval this function is negative.

    Answer: _____

    b) Determine the rate of change of this function.

    Answer: _____

3. A function is described by the following rule: $f(x) = \dfrac{5x}{6} - 2$

a) Determine over which interval this function is negative.

Answer: _____

b) Determine the rate of change of this function.

Answer: _____

4. A function is described by the following rule: $f(x) = \dfrac{5x}{4} - 2$

a) Determine over which interval this function is negative.

Answer: _____

b) Determine the rate of change of this function.

Answer: _____

5. A function is described by the following rule: $f(x) = \dfrac{6x}{5} - 3$

a) Determine over which interval this function is negative.

Answer: _____

b) Determine the rate of change of this function.

Answer: _____

e.g. 3 A function is described by the following rule: $f(x) = -x^2 + 4$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

III. You try:

1. A function is described by the following rule: $f(x) = -x^2 + 16$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

2. A function is described by the following rule: $f(x) = -x^2 + 1$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

3. A function is described by the following rule: $f(x) = -x^2 + 25$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

4. A function is described by the following rule: $f(x) = -x^2 + 36$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

5. A function is described by the following rule: $f(x) = -x^2 + 49$

a) Determine the interval over which this function is positive.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

e.g. 4 A function is described by the following rule: $f(x) = x^2 - 4$

a) Determine the interval over which this function is negative.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

IV. You try:

1. A function is described by the following rule: $f(x) = x^2 - 1$

a) Determine the interval over which this function is negative.

Answer: _____

b) Determine the interval over which this function is decreasing.

Answer: _____

2. A function is described by the following rule: $f(x) = x^2 - 16$

    a) Determine the interval over which this function is negative.

    Answer: _____

    b) Determine the interval over which this function is decreasing.

    Answer: _____

3. A function is described by the following rule: $f(x) = x^2 - 25$

    a) Determine the interval over which this function is negative.

    Answer: _____

    b) Determine the interval over which this function is decreasing.

    Answer: _____

4. A function is described by the following rule: $f(x) = x^2 - 36$

    a) Determine the interval over which this function is negative.

    Answer: _____

    b) Determine the interval over which this function is decreasing.

    Answer: _____

5. A function is described by the following rule: $f(x) = x^2 - 49$

    a) Determine the interval over which this function is negative.

    Answer: _____

    b) Determine the interval over which this function is decreasing.

    Answer: _____

Answers

I. ①a) $x \in -\infty, \frac{5}{2}\}$

   b) $-\frac{4}{5}$

   ② a) $x \in -\infty, \frac{10}{3}\}$

   b) $-\frac{3}{5}$

   ③ a) $x \in -\infty, \frac{18}{5}\}$

   b) $-\frac{5}{6}$

   ④ a) $x \in -\infty, \frac{8}{3}\}$

   b) $-\frac{3}{4}$

   ⑤ a) $x \in -\infty, \frac{15}{2}\}$

   b) $-\frac{2}{5}$

II. ① a) $x \in -\infty, \frac{4}{3}\}$

   b) $\frac{3}{4}$

   ② a) $x \in -\infty, \frac{3}{2}]$

   b) $\frac{4}{3}$

   ③ a) $x \in -\infty, \frac{12}{5}]$

   b) $\frac{5}{6}$

   ④ a) $x \in -\infty, \frac{8}{5}]$

   b) $\frac{5}{4}$

   ⑤ a) $x \in -\infty, \frac{5}{2}]$

   b) $\frac{6}{5}$

III. ① a) $x \in [-4, 4]$

   b) $x \in [0, \infty$

   ② a) $x \in [-1, 1]$

   b) $x \in [0, \infty$

   ③ a) $x \in [-5, 5]$

   b) $x \in [0, \infty$

   ④ a) $x \in [-6, 6]$

   b) $x \in [0, \infty$

   ⑤ a) $x \in [-7, 7]$

   b) $x \in [0, \infty$

IV. ①a) $x \in [-1, 1]$

   b) $x \in -\infty, 0]$

   ② a) $x \in [-4, 4]$

   b) $x \in -\infty, 0]$

   ③ a) $x \in [-5, 5]$

   b) $x \in -\infty, 0]$

   ④ a) $x \in [-6, 6]$

   b) $x \in -\infty, 0]$

   ⑤ a) $x \in [-7, 7]$

   b) $x \in -\infty, 0]$