

PRINTABLE VERSION

Practice Test 1

You scored 100 out of 100

Question 1

Your answer is CORRECT.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Give the distance from the point $(-3, -1)$ to the point $(-4, 6)$.

a) ☐ $\sqrt{26}$

$$d = \sqrt{(-4 + 3)^2 + (6 + 1)^2}$$

b) ☒ $5\sqrt{2}$

$$d = \sqrt{1 + 49} = \sqrt{50} = 5\sqrt{2}$$

c) ☐ $\sqrt{51}$

d) ☐ $\sqrt{74}$

e) ☐ $7\sqrt{2}$

f) ☐ None of the above.

Question 2

Your answer is CORRECT.

Solve for x :

$$11x - \frac{11}{2}(x - 3) = 33$$

a) ☐ $x = -11$

$$11x - \frac{11}{2}x + \frac{33}{2} = 33$$

b) ☐ $x = -3$

$$\frac{22x - 11x}{2} = \frac{66 - 33}{2}$$

c) ☒ $x = 3$

$$\frac{11x}{2} = \frac{33}{2}$$

d) ☐ $x = -\frac{11}{2}$

$$\frac{11x}{11} = \frac{33}{11}$$

e) ☐ $x = -6$

$$x = 3$$

f) ☐ None of the above.

Question 3

Your answer is CORRECT.

Solve the following equation for x :

$$3 + \left(\frac{1}{x} - 2 \right) = 15$$

a) ☐ $\frac{1}{10}$

b) ☒ $\frac{1}{14}$

c) ☐ $\frac{1}{12}$

d) ☐ $\frac{1}{16}$

e) ☐ $\frac{1}{20}$

f) ☐ None of the above.

$$3 + \frac{1}{x} - 2 = 15$$

$$\frac{1}{x} + 1 = 15$$

$$\frac{1}{x} = \frac{14}{1}$$

$$14x = 1$$

$$x = \frac{1}{14}$$

Question 4

Your answer is CORRECT.

A rectangle's length is twice its width. If the perimeter is 138 cm, find the width of the rectangle.

a) ☐ 21 cm

$$l = 2w$$

$$P = 2l + 2w$$

b) ☐ 20 cm

$$138 = 2(2w) + 2w$$

c) ☒ 23 cm

$$138 = 4w + 2w$$

d) ☐ 26 cm

$$138 = 6w$$

e) ☐ 22 cm

$$w = 23 \text{ cm}$$

f) ☐ None of the above.

Question 5

Your answer is CORRECT.

Solve for x :

$$x(3x - 5) = -2$$

a) ☐ $x = \frac{5}{3}, x = 0$

$$3x^2 - 5x = -2$$

b) ☐ $x = -\frac{5}{3}, x = 0$

$$3x^2 - 5x + 2 = 0$$

c) ☒ $x = \frac{2}{3}, x = 1$

$$(3x - 2)(x - 1) = 0$$

d) ☐ $x = \frac{2}{3}, x = -1$

$$3x - 2 = 0$$

$$x - 1 = 0$$

$$3x = 2$$

$$x = 1$$

e) ☐ $x = -\frac{2}{3}, x = 1$

$$x = \frac{2}{3}$$

f) ☐ None of the above.

Question 6

Your answer is CORRECT.

Use the quadratic formula to solve the equation

$$5x^2 + 3x - 5 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-3 \pm \sqrt{9 - 4(-5)(5)}}{2(5)}$$

$$x = \frac{-3 \pm \sqrt{109}}{10}$$

$$x = \frac{-3}{10} \pm \frac{\sqrt{109}}{10}$$

$$x = -\frac{3}{10} + \frac{\sqrt{109}}{10} \quad x = -\frac{3}{10} - \frac{\sqrt{109}}{10}$$

a) ☐ $\left\{ x = -\frac{3}{10} + \frac{1}{10} \sqrt{109}, x = \frac{3}{10} - \frac{1}{10} \sqrt{109} \right\}$

b) ☐ $\left\{ x = \frac{3}{10} - \frac{1}{10} \sqrt{109}, x = \frac{3}{10} + \frac{1}{10} \sqrt{109} \right\}$

c) ☐ $\left\{ x = -\frac{3}{5} - \frac{1}{5} \sqrt{109}, x = -\frac{3}{5} + \frac{1}{5} \sqrt{109} \right\}$

d) ☒ $\left\{ x = -\frac{3}{10} - \frac{1}{10} \sqrt{109}, x = -\frac{3}{10} + \frac{1}{10} \sqrt{109} \right\}$

e) ☐ $\left\{ x = -\frac{3}{10} - \frac{1}{10} \sqrt{109}, x = \frac{3}{10} + \frac{1}{10} \sqrt{109} \right\}$

f) ☐ None of the above.

Question 7

Your answer is CORRECT.

Find the solutions of the equation

$$35 < 5x - \frac{5}{2} \cdot (x - 7) \leq 70$$

a) ☐ $(7, 21)$

b) ☐ $(-\infty, 7] \cup [21, \infty)$

c) ☒ $(7, 21]$

d) ☐ $[7, 21]$

e) ☐ $(-\infty, 7) \cup [21, \infty)$

f) ☐ None of the above.

$$35 < 5x - \frac{5}{2}x + \frac{35}{2} \leq 70$$

$$35 < \frac{5x}{2} + \frac{35}{2} \leq 70$$

$$70 < 5x + 35 \leq 140$$

$$\begin{array}{ccc} -35 & -35 & -35 \\ \hline \end{array}$$

$$35 < 5x \leq 105$$

$$7 < x \leq 21 \rightarrow (7, 21]$$

Question 8

Your answer is CORRECT.

Solve the following inequality and express the solution in interval notation.

$$\left| \frac{1}{8} \cdot (x - 1) \right| \leq 11$$

a) ☐ $(-\infty, -87] \cup [89, \infty)$

b) ☐ $[89, \infty]$

c) ☒ $[-87, 89]$

d) ☐ $[-89, 89]$

e) ☐ $[-87, 87]$

f) ☐ None of the above.

$$-11 \leq \frac{1}{8}x - \frac{1}{8} \leq 11$$

$$\begin{array}{ccc} +\frac{1}{8} & +\frac{1}{8} & +\frac{1}{8} \end{array}$$

$$-\frac{87}{8} \leq \frac{1}{8}x \leq \frac{89}{8}$$

$$-87 \leq x \leq 89 \rightarrow [-87, 89]$$

Question 9

Your answer is CORRECT.

Solve for x .

$$\left| \frac{8}{9}x - 2 \right| = 1$$

a) ☐ $x = \frac{9}{8}$

$$\frac{8}{9}x - 2 = 1$$

$$\frac{8}{9}x - 2 = -1$$

b) ☒ $x = \frac{27}{8}, x = \frac{9}{8}$

$$\frac{8}{9}x = \frac{3}{1}$$

$$\frac{8}{9}x = \frac{1}{1}$$

c) ☐ $x = \frac{8}{3}$

$$\frac{8x}{8} = \frac{27}{8}$$

$$\frac{8x}{8} = \frac{9}{8}$$

d) ☐ $x = \frac{8}{3}, x = \frac{8}{9}$

e) ☐ $x = \frac{27}{8}$

$$x = \frac{27}{8}$$

$$x = \frac{9}{8}$$

f) ☐ None of the above.

Question 10

Your answer is CORRECT.

Given the following function, calculate $f(-5)$.

$$f(x) = (x - 2)^2 + 3$$

a) ☐ -46

$$f(-5) = (-5 - 2)^2 + 3$$

b) ☐ 46

$$= (-7)^2 + 3$$

c) ☐ 530

$$= 49 + 3$$

d) ☒ 52

$$= 52$$

e) ☐ 6

f) ☐ None of the above.

Question 11

Your answer is CORRECT.

Given the following function, find $f(x + 1)$.

$$f(x) = 7x^2 - x + 1$$

a) ☐ $7x^2 - 13x - 7$

$$f(x+1) = 7(x+1)^2 - (x+1) + 1$$

$$= 7(x^2 + 2x + 1) - x - 1 + 1$$

$$= 7x^2 + 14x + 7 - x$$

b) ☒ $7x^2 + 13x + 7$

$$= 7x^2 + 13x + 7$$

c) ☐ $x^2 + 13x + 7$

d) ☐ $6x + 9$

e) ☐ $7x^2 - 13x + 7$

f) ☐ None of the above.

Question 12

Your answer is CORRECT.

Find the domain of the following function and express the answer in interval notation.

$$f(x) = \frac{x+2}{2x+2}$$

a) ☐ $(-\infty, 1) \cup (1, \infty)$

b) ☐ $(-\infty, \infty)$

c) ☒ $(-\infty, -1) \cup (-1, \infty)$

d) ☐ $(-\infty, -2) \cup (-2, \infty)$

e) ☐ $(-1, \infty)$

f) ☐ None of the above.

$$\uparrow \neq 0$$

$$2x + 2 \neq 0$$

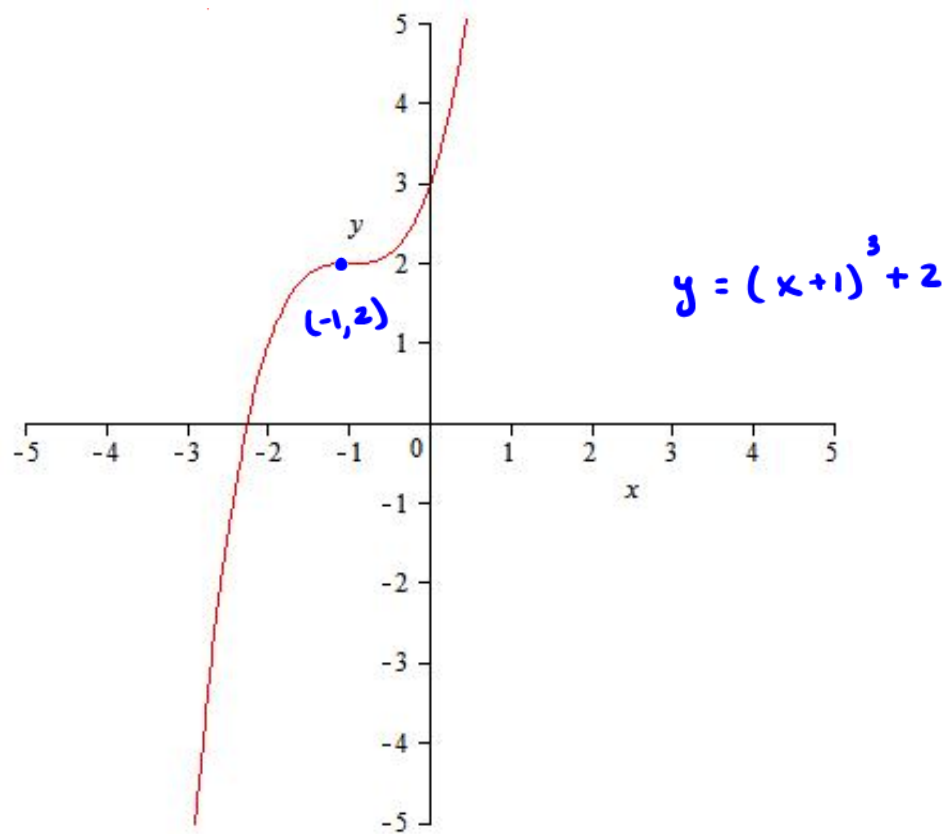
$$2x \neq -2$$

$$x \neq -1 \rightarrow (-\infty, -1) \cup (-1, \infty)$$

Question 13

Your answer is CORRECT.

Which of the following functions matches the graph below?



- a) ☐ $f(x) = (x+2)^3 - 1$
- b) ☐ $f(x) = (x-2)^3 + 1$
- c) ☐ $f(x) = -(x+1)^3 + 2$
- d) ☐ $f(x) = (x-1)^3 + 2$
- e) ☒ $f(x) = (x+1)^3 + 2$
- f) ☐ None of the above.

Question 14

Your answer is **CORRECT**.

Write the function

$$f(x) = x^2 + 6x + 22$$

in the standard form

$$f(x) = a(x-h)^2 + k$$

a) ☐ $f(x) = (x - 3)^2 + 31$

$$f(x) = x^2 + 6x + \left(\frac{6}{2}\right)^2 + 22 - \left(\frac{6}{2}\right)^2$$

b) ☐ $f(x) = (x + 3)^2 - 31$

$$f(x) = (x + 3)^2 + 22 - 9$$

c) ☒ $f(x) = (x + 3)^2 + 13$

$$f(x) = (x + 3)^2 + 13$$

d) ☐ $f(x) = (x - 3)^2 - 9$

e) ☐ $f(x) = (x + 3)^2 - 13$

f) ☐ None of the above.

Question 15**Your answer is CORRECT.**Given $f(x) = 3x + 8$ and $g(x) = x^2 + 11x$. Find $(f \circ g)(5)$.

$$g(5) = 25 + 55 \\ = 80$$

a) ☐ 232

$$f(g(5)) = f(75)$$

b) ☐ 782

$$= 3(80) + 8$$

c) ☐ 138

$$= 240 + 8$$

d) ☒ 248

$$= 248$$

e) ☐ 44

f) ☐ None of the above.

Question 16**Your answer is CORRECT.**The function f is given below. Suppose g is the inverse function of f . Find $g(x)$.

$$f(x) = \frac{11}{x - 7}$$

a) ☐ $\frac{1}{7}x + 11$

$$y = \frac{11}{x - 7}$$

b) ☐ $-\frac{1}{7}x - 11$

c) ☒ $\frac{7x+11}{x}$

d) ☐ $\frac{7x-11}{x}$

e) ☐ $7x+11$

f) ☐ None of the above.

$$\frac{x}{1} = \frac{11}{y-7} \quad \text{Do cross-product!}$$

$$x(y-7) = 11$$

$$xy - 7x = 11 \Rightarrow xy = 11 + 7x$$

$$\frac{xy}{x} = \frac{11 + 7x}{x}$$

$$y = \frac{7x+11}{x}$$

$$f^{-1}(x) = \frac{7x+11}{x}$$

Question 17

Your answer is CORRECT.

Find the x -intercepts of

$$\hookrightarrow y=0$$

$$P(x) = (x-7)^2(x-3)^4(x+6)^4$$

a) ☐ $\{-7, 3, 6\}$

$$(x-7)^2=0$$

$$(x-3)^4=0$$

$$(x+6)^4=0$$

b) ☒ $\{7, 3, -6\}$

$$x-7=0$$

$$x-3=0$$

$$x+6=0$$

c) ☐ $\{-6, 4, -6\}$

$$x=7$$

$$x=3$$

$$x=-6$$

d) ☐ $\{7, -3, 6\}$

e) ☐ $\{-7, -3, 6\}$

f) ☐ None of the above.

Question 18

Your answer is CORRECT.

Find the y -intercept of

$$\hookrightarrow x=0$$

$$P(x) = (x+4)(x-4)(x+2)$$

a) ☒ -32

$$P(0) = 4(-4)(2)$$

b) ☐ -8

$$= (-16)(2) = -32$$

- c) ☐ -16
- d) ☐ 32
- e) ☐ 8
- f) ☐ None of the above.

Question 19

Your answer is CORRECT.

Use long division to find the quotient and remainder of

$$\frac{8x^4 + 10x^2 + x + 11}{x^3 - x + 2}$$

top dog
in the box

a) ☐ $[Q = 8x, R = 18x^2 + 17x + 11]$

b) ☐ $[Q = 8x + 8, R = 10x^2 + x + 11]$

c) ☐ $[Q = 8x, R = 2x^2 - 15x + 11]$

d) ☒ $[Q = 8x, R = 18x^2 - 15x + 11]$

e) ☐ $[Q = 8x, R = 18x^2 - 15x]$

f) ☐ None of the above.

$$\begin{array}{r} 8x \\ x^3 - x + 2 \overline{) 8x^4 + 0x^3 + 10x^2 + x + 11} \\ \underline{-(8x^4 + 0x^3 - 8x^2 + 16x)} \\ 18x^2 - 15x + 11 \end{array}$$

Q: $8x$
R: $18x^2 - 15x + 11$

Question 20

Your answer is CORRECT.

Find the vertical asymptote(s) of the function:

$$f(x) = \frac{x^2 + x - 42}{x - 6} = \frac{(x - 6)(x + 7)}{(x - 6)}$$

a) ☐ $x = -6$

b) ☐ $x = 7$

$$= x + 7$$

- c) ☐ $x = 6$
- d) ☐ $x = 0$
- e) ☒ There are no vertical asymptotes.
- f) ☐ None of the above.

Question 21

Your answer is CORRECT.

Find the horizontal asymptote(s), if any, of the function:

Rules: $y = \frac{ax^m}{bx^n}$

$$f(x) = \frac{9}{x+4}$$

$m > n$ no HA
 $m < n$ $y = 0$
 $m = n$ $y = \frac{a}{b}$

a) ☐ $y = \frac{9}{4}$

$m = 0$

b) ☐ $y = -\frac{9}{4}$

$n = 1$

c) ☐ $y = -4$

$m < n \rightarrow y = 0$

d) ☒ $y = 0$

e) ☐ No horizontal asymptote.

f) ☐ None of the above.

Question 22

Your answer is CORRECT.

Solve the system for y .

$$\begin{aligned} 4x + 3y &= -9 \\ x - y &= 3 \end{aligned}$$

a) ☐ $y = -5$

$x = 3 + y$

b) ☒ $y = -3$

$4(3+y) + 3y = -9$

c) ☐ $y = 5$

$12 + 4y + 3y = -9$

d) ☐ $y = 3$

$7y = -21$

$y = -3$

e) ☐ $y = -1$ f) ☐ None of the above.

Question 23

Your answer is CORRECT.

Find the linear function $f(x)$ that satisfies $f(-7) = 6$, and has a graph that is perpendicular to the line

$$-20x - 4y = 1$$

a) ☐ $f(x) = 5x + 41$ b) ☐ $f(x) = \frac{1}{5}x + 6$ c) ☒ $f(x) = \frac{1}{5}x + \frac{37}{5}$ d) ☐ $f(x) = -\frac{1}{5}x + \frac{37}{5}$ e) ☐ $f(x) = -5x + 41$ f) ☐ None of the above.

$$-4y = 1 + 20x$$

$$y = -5x - \frac{1}{4}$$

$$\downarrow$$

$$m = -5 \quad m_{\perp} = \frac{1}{5}$$

$$y - y_0 = m_{\perp}(x - x_0)$$

$$y - 6 = \frac{1}{5}(x + 7)$$

$$y = \frac{1}{5}x + \frac{7}{5} + 6$$

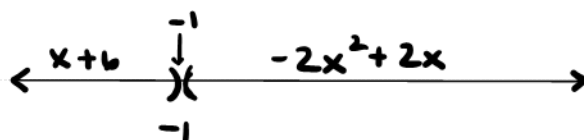
$$y = \frac{1}{5}x + \frac{37}{5}$$

Question 24

Your answer is CORRECT.

Find $f(-1)$ given

$$f(x) = \begin{cases} x + 6 & x < -1 \\ -1 & x = -1 \\ -2x^2 + 2x & -1 < x \end{cases}$$

a) ☐ 5b) ☐ -2c) ☒ -1

$$f(-1) = -1$$

d) ☐ -4e) ☐ -5**Question 25****Your answer is CORRECT.**

Simplify the following.

$$\begin{aligned}
 \frac{\left(\frac{x^2 - 4}{x^{13} y^{15}}\right)}{\left(\frac{x - 2}{x y^7}\right)} &= \frac{x^2 - 4}{x^{13} y^{15}} \cdot \frac{x y^7}{x - 2} \\
 &= \frac{(x/2)(x+2)}{x^{13} y^{15}} \cdot \frac{x y^7}{x/2} \\
 &= \frac{(x+2)}{x^{12} y^8}
 \end{aligned}$$

a) ☐ $\frac{y^8 x^{12}}{x + 2}$ b) ☒ $\frac{x + 2}{y^8 x^{12}}$ c) ☐ $\frac{x + 2}{x^{14} y^{22}}$ d) ☐ $\frac{x - 2}{x^{14} y^8}$ e) ☐ $\frac{x - 2}{x^{12} y^{22}}$