

PRINTABLE VERSION

Practice Final

Question 1

Find the coordinates of the y -intercept for $8x - 2y - 10 = 0$.

- a) $\left(0, \frac{1}{5}\right)$
- b) $(0, 5)$
- c) $(0, -5)$
- d) $\left(0, \frac{5}{4}\right)$
- e) $\left(0, -\frac{5}{4}\right)$
- f) None of the above

Question 2

Find the slope of the line: $-7x + 3y + 5 = 0$

- a) $-\frac{7}{3}$
- b) $-\frac{3}{7}$
- c) $\frac{7}{3}$
- d) $\frac{3}{7}$
- e) $-\frac{5}{3}$

f) None of the above

Question 3

Solve the following equation for x : $\frac{5}{2x} + \frac{3}{4x} = -13$

a) $-\frac{1}{10}$

b) $\frac{1}{4}$

c) -1

d) $\frac{1}{10}$

e) $-\frac{1}{4}$

f) None of the above

Question 4

Solve the system for x :

$$6x + y = -58$$

$$4x - y = -2$$

a) -7

b) -8

c) 6

d) 4

e) -6

f) None of the above

Question 5

Solve the following system:

$$\begin{aligned}-2x + 3y &= 6 \\ -6y + 4x &= -12\end{aligned}$$

- a) Infinitely many solutions.
- b) $x = 3, y = 4$
- c) $x = 4, y = 4$
- d) $x = 5, y = 5$
- e) No solution.
- f) None of the above

Question 6

Find the domain of the following function. Express the answer in interval notation.

$$f(x) = \sqrt{-11x + 4}$$

- a) $\left(-\infty, \frac{4}{11}\right)$
- b) $\left(-\infty, \frac{4}{11}\right]$
- c) $\left(\frac{4}{11}, \infty\right)$
- d) All real numbers
- e) $\left[\frac{4}{11}, \infty\right)$
- f) None of the above

Question 7

Solve the equation: $x^2 - 5x = 6$

- a) $x = -1, x = 8$
- b) $x = 1, x = -6$

- c) $x = 1, x = 6$
- d) $x = -1, x = 6$
- e) $x = -1, x = -6$
- f) None of the above

Question 8

Simplify the following expression and write in the form $a + bi$:

$$\frac{1 + \sqrt{-16}}{\sqrt{-4} \cdot \sqrt{-25}}$$

- a) $\frac{1}{2} + \frac{4}{5}i$
- b) $-\frac{1}{2} - \frac{4}{5}i$
- c) $-\frac{1}{10} - \frac{2}{5}i$
- d) $\frac{1}{10} - \frac{2}{5}i$
- e) $\frac{1}{10} + \frac{2}{5}i$
- f) None of the above

Question 9

Find all solutions to the following equation: $x - 11\sqrt{x} + 30 = 0$

- a) $x = -5, x = -6$
- b) $x = \sqrt{6}, x = \sqrt{5}$
- c) $x = 36, x = 25$
- d) $x = 5, x = 6$
- e) $x = 0, x = 30$

f) None of the above

Question 10

Solve the inequality for x and express the solution in interval notation: $5x^2 - 18 > x^2 + 21x$

a) $\left(-\infty, -\frac{3}{4}\right) \cup (6, \infty)$

b) $\left(-6, \frac{3}{4}\right)$

c) $(-\infty, -6) \cup \left(\frac{3}{4}, \infty\right)$

d) $\left[-\frac{3}{4}, 6\right]$

e) $\left(-\infty, -\frac{3}{4}\right] \cup [6, \infty)$

f) None of the above

Question 11

Solve the inequality for x , given that: $\frac{2x - 8}{(x - 2)(x - 8)} < 0$

a) $(-\infty, -4) \cup (4, 8)$

b) $(-\infty, 4) \cup (4, \infty)$

c) $(-\infty, 2) \cup (4, \infty)$

d) $(-\infty, 2) \cup (4, 8)$

e) $(-\infty, -2) \cup (4, 8)$

f) None of the above

Question 12

Solve the following inequality and give the answer in interval notation: $12 - 2|x + 4| > 6$

- a) $(-7, -1)$
- b) $(-\infty, -7) \cup (-1, \infty)$
- c) No Solution.
- d) $(-\infty, -\frac{23}{5}) \cup (-\frac{17}{5}, \infty)$
- e) $(-\frac{23}{5}, -\frac{17}{5})$
- f) None of the above

Question 13

Solve the for x : $|3x - 2| + 7 = 4$

- a) $\left\{-\frac{1}{3}, \frac{5}{3}\right\}$
- b) $\left\{-\frac{1}{3}, \frac{1}{3}\right\}$
- c) No Solution.
- d) $\{3\}$
- e) $\{3, -3\}$
- f) None of the above

Question 14

For the function f given by $f(x) = -3x + 2$, evaluate $f\left(\frac{1}{a+1}\right)$.

- a) $\frac{2a-1}{a+1}$
- b) $\frac{2a-1}{a+2}$
- c) $\frac{2a-5}{a+2}$

d) $\frac{-2a - 1}{a + 1}$

e) $\frac{2a - 5}{a + 1}$

f) None of the above**Question 15**

Find the domain of the function $f(x) = \frac{\sqrt{x+8}}{x-5}$

a) $[-8, 5) \cup (5, \infty)$

b) $[-8, 5] \cup [5, \infty)$

c) $(5, \infty)$

d) $(-8, \infty)$

e) $(-8, 5] \cup [5, \infty)$

f) None of the above**Question 16**

Suppose that $y = f(x)$ is an even function such that $(3, 4)$ is a point on the graph of f . Which of the following points belong to the graph of f ?

a) $(3, -4)$

b) $(4, -3)$

c) $(3, 4)$

d) $(-3, 4)$

e) $(-4, -3)$

f) None of the above**Question 17**

Find the vertex of the graph of

$$f(x) = 5x^2 - 40x + 94$$

- a) (4, -14)
- b) (4, 14)
- c) (-4, 14)
- d) (-4, -14)
- e) (0, 4)
- f) None of the above

Question 18

Find $(g \circ f)(x)$, given the following functions:

$$f(x) = 9x - 8$$

$$g(x) = \sqrt{x}$$

- a) $3\sqrt{x} - 8$
- b) $3x - 8$
- c) $9\sqrt{x} - 8$
- d) $\sqrt{9x - 8}$
- e) $\sqrt{9x + 8}$
- f) None of the above

Question 19

Let

$$f(x) = x^3 - 6$$

Suppose g is the inverse function of f . Find $g(x)$.

- a) $g(x) = \sqrt[3]{x} + \sqrt[3]{6}$
- b) $g(x) = \sqrt[3]{x + 6}$
- c) $g(x) = x + 6$

- d) $g(x) = (x + 6)^3$
- e) $g(x) = \sqrt[3]{x - 6}$
- f) None of the above

Question 20

What transformations are needed to go from the graph of the basic function

$$f(x) = \sqrt[3]{x}$$

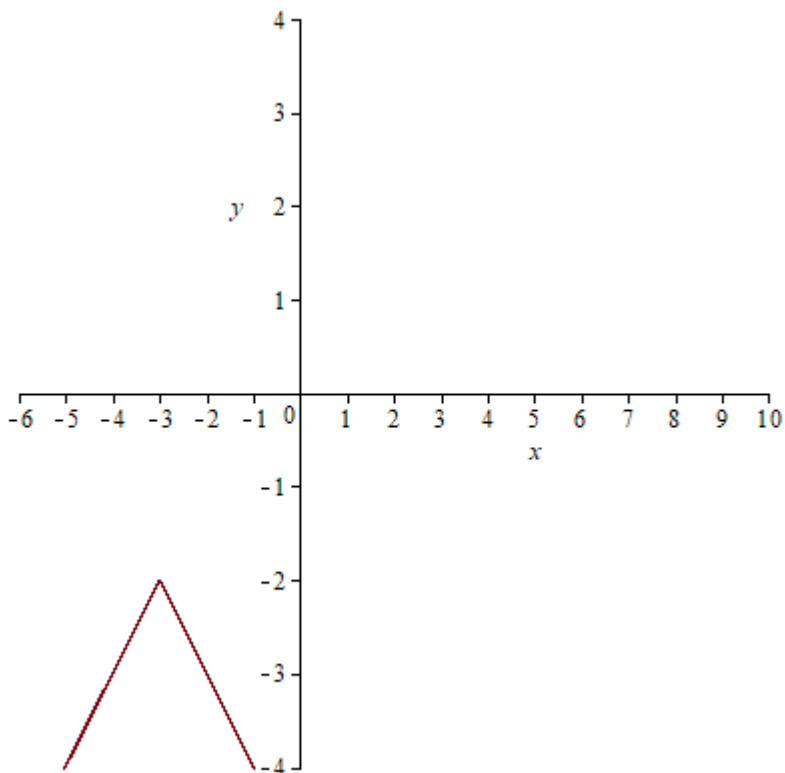
to the graph of

$$g(x) = \sqrt[3]{x + 1} + 5$$

- a) Shift left 1 units, and shift up 5 units.
- b) Shift left 5 units, and shift down 1 units.
- c) Shift left 1 units, and shift down 5 units.
- d) Shift up 1 units, and shift down 5 units.
- e) Shift up 1 units.
- f) None of the above

Question 21

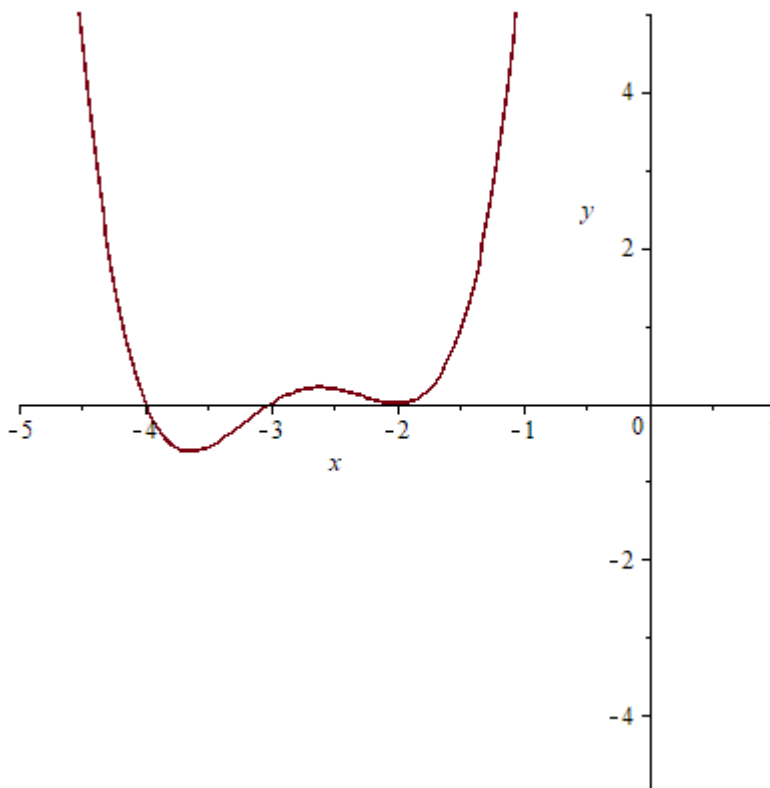
Which of the following functions matches the graph below?



- a) $f(x) = |x - 3| - 2$
- b) $f(x) = |x - 3| + 2$
- c) $f(x) = -|x + 3| + 2$
- d) $f(x) = |x + 3| + 2$
- e) $f(x) = -|x + 3| - 2$
- f) None of the above

Question 22

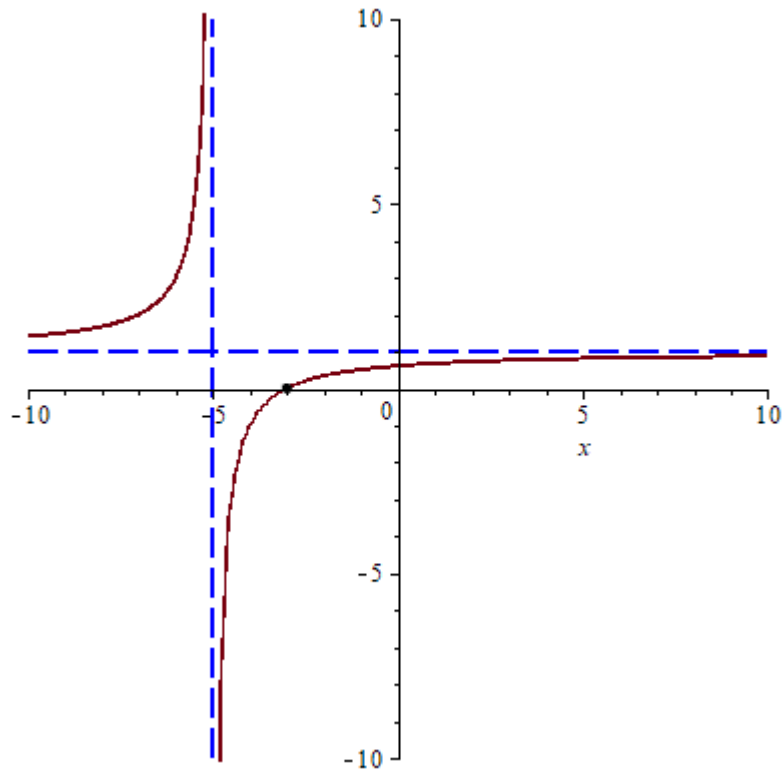
Which of the following functions could correspond to graph below?



- a) $f(x) = -(x - 4)(x + 3)^2(x + 2)^3$
- b) $f(x) = -(x - 4)(x + 3)(x + 2)$
- c) $f(x) = (x + 4)(x + 3)(x + 2)^2$
- d) $f(x) = (x + 4)^3(x - 3)(x + 2)$
- e) $f(x) = -(x - 4)^2(x + 3)(x - 2)^3$
- f) None of the above

Question 23

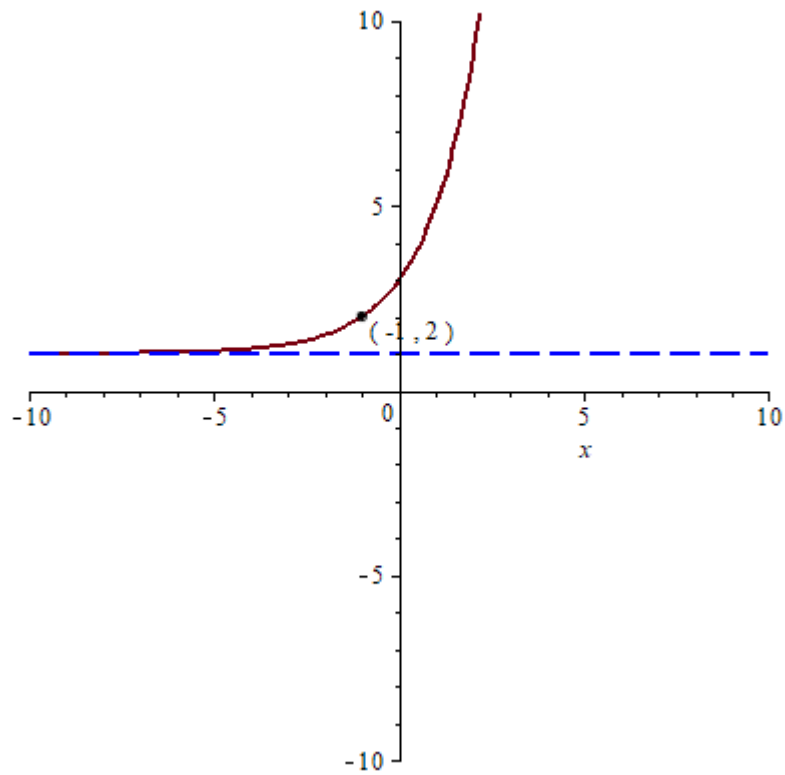
Find the function, whose graph is shown below



- a) $f(x) = \frac{x + 5}{x + 3}$
- b) $f(x) = \frac{x - 3}{x - 5}$
- c) $f(x) = \frac{x + 3}{x + 5}$
- d) $f(x) = \frac{x + 3}{x - 5}$
- e) $f(x) = \frac{x - 3}{x + 5}$
- f) None of the above

Question 24

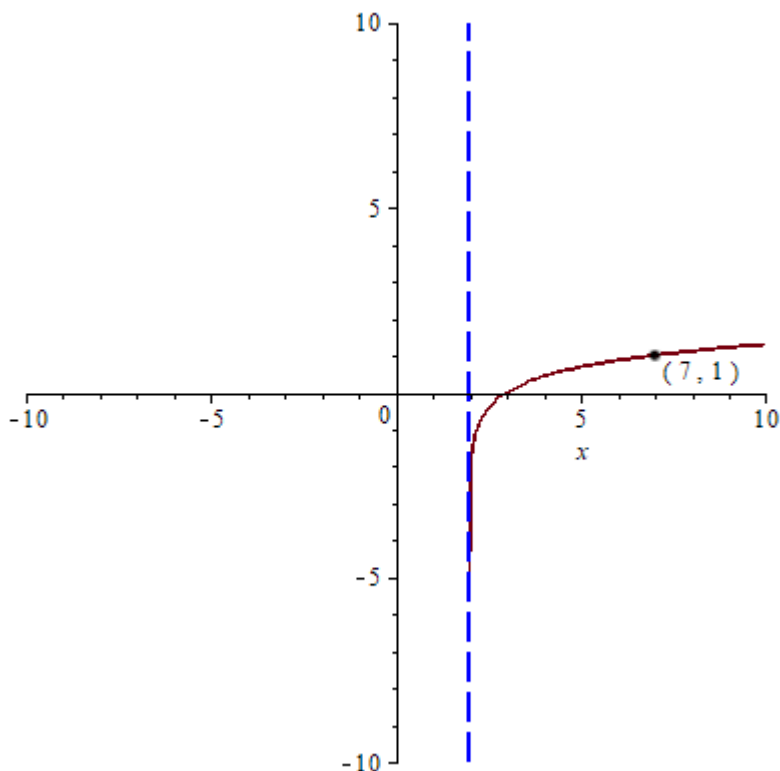
Which of the following functions corresponds to the graph?



- a) $f(x) = 2^{x+1} - 1$
- b) $f(x) = -2^{x+1} - 1$
- c) $f(x) = 2^{x-1} - 1$
- d) $f(x) = 2^{x+1} + 1$
- e) $f(x) = 2^{x-1} + 1$
- f) None of the above

Question 25

Find the function, whose graph is shown below



- a) $f(x) = \log_6(x - 2)$
- b) $f(x) = \log_2(x - 5)$
- c) $f(x) = \log_5(x - 2)$
- d) $f(x) = \log_5(x + 2)$
- e) $f(x) = \log_2(x + 5)$
- f) None of the above

Question 26

Find the asymptote and the range of the given exponential function

$$f(x) = -7 \cdot 2^{x-7} - 7$$

- a) Asymptote $y = 7$, Range = $(-\infty, 7)$
- b) Asymptote $y = 7$, Range = $(7, \infty)$
- c) Asymptote $y = -7$, Range = $(-7, \infty)$
- d) Asymptote $y = 0$, Range = $(0, \infty)$
- e) Asymptote $y = -7$, Range = $(-\infty, -7)$

f) None of the above

Question 27

Find the asymptote and the domain of the given logarithmic function

$$f(x) = \log_9(-3x + 6) - 8$$

- a) Asymptote $x = -2$, Domain = $(-\infty, -2)$
- b) Asymptote $x = -8$, Domain = $(-\infty, -8)$
- c) Asymptote $x = -2$, Domain = $(-2, \infty)$
- d) Asymptote $x = 2$, Domain = $(-\infty, 2)$
- e) Asymptote $x = 2$, Domain = $(2, \infty)$
- f) None of the above

Question 28

Given the polynomial

$$P(x) = (x - 3)^2(x + 1)(x - 2)^3$$

, the behavior of the x -intercept $x = 3$ resembles to the shape of

- a) Cubic downward from left to right
- b) Parabola, downward
- c) Parabola, upward
- d) Increasing line
- e) Decreasing line
- f) None of the above

Question 29

Find the zero(s) of the function

$$P(x) = x^3 + 5x^2 - 16x - 80$$

- a) $\{-4, 4, 5\}$
- b) $\{4, -5, 5\}$
- c) $\{-4, 4, -5\}$
- d) $\{4, 5\}$
- e) $\{-5\}$
- f) None of the above

Question 30

Find a polynomial of degree 5 with integer coefficients that has zeros $1, i, \sqrt{2}i$, and y -intercept of 10.

- a) $P(x) = (x + 1)(x^2 - 1)(x^2 - 2)$
- b) $P(x) = -5(x + 1)(x^2 - 1)(x^2 - 2)$
- c) $P(x) = -5(x - 1)(x^2 + 1)(x^2 + 2)$
- d) $P(x) = -5(x - 1)(x^2 - 1)(x^2 - 2)$
- e) $P(x) = (x - 1)(x^2 + 1)(x^2 + 2)$
- f) None of the above

Question 31

Find any holes of the function

$$f(x) = \frac{x^2 + 17x + 70}{x + 7}$$

- a) $x = -7$
- b) There are no holes.
- c) $x = -10$
- d) $x = 7$
- e) $x = 6$
- f) None of the above

Question 32

Rewrite the following expression by using the laws of logarithms:

$$\log_5 \left(\frac{x^3(x^2 + 4)^2}{\sqrt[3]{y + 7}z^7} \right)$$

- a) $3\log_5(x) + 2\log_5(x^2 + 4) + \frac{1}{3}\log_5(y - 7) + 7\log_5(z)$
- b) $2\log_5(x) + 3\log_5(x^2 + 4) - \frac{1}{3}\log_5(y + 7) - 7\log_5(z)$
- c) $3\log_5(x) - 2\log_5(x^2 + 4) - \frac{1}{3}\log_5(y + 7) - 7\log_5(z)$
- d) $3\log_5(x) + 2\log_5(x^2 + 4) - \frac{1}{3}\log_5(y + 7) - 7\log_5(z)$
- e) $3\log_5(x) - 2\log_5(x^2 - 4) + \frac{1}{3}\log_5(y - 7) + 7\log_5(z)$
- f) None of the above

Question 33

Rewrite the following expression as a single logarithm:

$$8\ln(T) + 2\ln(R) - \frac{1}{3}\ln(Y) - 5\ln(V)$$

- a) $\ln \left(\frac{T^8 R^2}{\sqrt[3]{Y} + V^5} \right)$
- b) $\ln \left(\frac{R^8 T^2}{\sqrt[3]{Y} V^5} \right)$
- c) $\ln \left(\frac{T^8 R^2}{Y^3 V^5} \right)$
- d) $\ln \left(\frac{8 T^2 R}{\sqrt[3]{Y} V^5} \right)$
- e) $\ln \left(\frac{T^8 R^2}{\sqrt[3]{Y} V^5} \right)$
- f) None of the above

Question 34

Evaluate the following expression

$$\log_4 (64^5)$$

- a) 20
- b) 15
- c) 8
- d) 12
- e) 7
- f) None of the above

Question 35

Find all solutions to:

$$3e^{x+9} + 3 = 57$$

- a) $x = \ln(18) + 9$
- b) $x = \ln(18) - 9$
- c) $x = \ln(-18) - 9$
- d) $x = \ln(-18) + 9$
- e) $x = \ln(6) - 9$
- f) None of the above

Question 36

Solve for x :

$$-5\log_4 (-4x + 3) + 3 = -12$$

- a) $x = -\frac{61}{4}$
- b) $x = -\frac{67}{4}$

- c) $x = \frac{68}{3}$
- d) $x = -\frac{193}{256}$
- e) $x = \frac{191}{256}$
- f) None of the above