

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Solve.**

1) $|3x + 8| < 10$

A) $x < 3$

B) $x < -6$

C) $-6 < x < \frac{2}{3}$

D) $x < -6$ or $x > \frac{2}{3}$

Solve the equation.

2) $\sqrt{3x + 7} + 7 = x$

A) $x = 14, x = 3$

B) $x = 7$

C) $x = 14$

D) No solution

Solve the inequality.

3) $4x^2 - 20x + 24 < 0$

A) $x < -3$ or $x > -2$

B) $2 < x < 3$

C) $x < 2$ or $x > 3$

D) $-3 < x < -2$

Solve.

4) $\left| \frac{3x - 1}{4} \right| > 8$

A) $x < -12$ or $x > 11$

B) $-12 < x < 11$

C) $x < -\frac{31}{3}$ or $x > 11$

D) $-\frac{31}{3} < x < 11$

Solve the problem.5) If a rocket is propelled upward from ground level, its height h in meters after t sec is given by

$$h(t) = -9.8t^2 + 49t.$$
 During what interval of time will the rocket be higher than 58.8 m?

A) $0 \text{ sec} < t < 3 \text{ sec}$

B) $2 \text{ sec} < t < 3 \text{ sec}$

C) $0 \text{ sec} < t < 2 \text{ sec}$

D) $4 \text{ sec} < t < 5 \text{ sec}$

Use the quadratic formula or graphing methods to solve the inequality.

6) $2x^2 + 10x + 4 \geq 0$

A) $x \geq \frac{-5 + \sqrt{17}}{2} \approx -0.438$

B) $\frac{-5 - \sqrt{17}}{2} \approx -4.562 \leq x \leq \frac{-5 + \sqrt{17}}{2} \approx -0.438$

C) $x \leq \frac{-5 - \sqrt{17}}{2} \approx -4.562$

D) $x \leq \frac{-5 - \sqrt{17}}{2} \approx -4.562$ or $x \geq \frac{-5 + \sqrt{17}}{2} \approx -0.438$

Solve the problem.

7) The cost C of producing t units is given by $C(t) = 4t^2 + 6t$, and the revenue R generated from selling t units is given by $R(t) = 5t^2 + t$. For what values of t will there be a profit?

- A) $t > 0$ B) $t > 7$ C) $t > 5$ D) $t > 6$

8) Assume that the elevation E , in feet, of a sag in a proposed route is given by $E(x) = 0.000035x^2 - 0.3x + 1400$, where x represents the horizontal distance in feet along the proposed route and $0 \leq x \leq 5000$. For what x -values is the elevation 1250 feet or more? Round your answer to the nearest foot.

- A) $x < 533$ ft or $x > 8038$ ft B) $x < 533$ ft or $x > 8048$ ft
C) $x < 543$ ft or $x > 8038$ ft D) $x < 543$ ft or $x > 8048$ ft

Solve the equation.

9) $|x + 11| = x^2 + 11x$

- A) -1, 1 B) -11, -1, 1 C) -11, -1 D) -11, 1

Use the quadratic formula or graphing methods to solve the inequality.

10) $4x^2 + 20x + 8 \leq 0$

- A) $\frac{-5 - \sqrt{17}}{2} \approx -4.562 \leq x \leq \frac{-5 + \sqrt{17}}{2} \approx -0.438$
B) $x \geq \frac{-5 + \sqrt{17}}{2} \approx -0.438$
C) $x \leq \frac{-5 - \sqrt{17}}{2} \approx -4.562$
D) $x \leq \frac{-5 - \sqrt{17}}{2} \approx -4.562$ or $x \geq \frac{-5 + \sqrt{17}}{2} \approx -0.438$

Solve the equation.

11) $\sqrt{p^2 - 5p + 49} = p + 2$

- A) $x = 7$ B) $x = 5$ C) $x = -5$ D) $x = -\frac{5}{2}$

Use the quadratic formula or graphing methods to solve the inequality.

12) $4x^2 - 18x + 4 \geq 0$

- A) $x \leq \frac{9 - \sqrt{65}}{4} \approx 0.234$ B) $x \leq \frac{9 - \sqrt{65}}{4} \approx 0.234$ or $x \geq \frac{9 + \sqrt{65}}{4} \approx 4.266$
C) $x \geq \frac{9 + \sqrt{65}}{4} \approx 4.266$ D) $\frac{9 - \sqrt{65}}{4} \approx 0.234 \leq x \leq \frac{9 + \sqrt{65}}{4} \approx 4.266$

Solve.

13) $\sqrt[3]{3x^2 + 3x - 1} = \sqrt[3]{x}$

- A) $x = -1, x = \frac{1}{3}$ B) $x = -1, x = -\frac{1}{3}$ C) $x = \frac{1}{3}$ D) No solution

14) $x^{3/2} = -64$

- A) -16
C) -4

- B) 16
D) Not a real number

15) $\sqrt[3]{x+2} = 7$

A) $x = 341$

B) $x = 5$

C) $x = 47$

D) $x = 343$

16) $x^3 > 216$

A) $x > 36$

B) $x > 6$

C) $x < 15$

D) $x < -6$ or $x > 6$

Solve the equation.

17) $|b + 7| = 2$

A) -9

B) -5, -9

C) 5, 9

D) -5

Solve the problem.

18) Assume that the profit P made when t units are sold, $t > 0$, is given by $P(t) = t^2 - 19t + 84$. For what values of t will there be a profit (that is, $P > 0$)?

A) $0 < t < 7$ or $t > 12$

B) $t = 7$ or $t = 12$

C) $7 < t < 12$

D) $t = 19$

Solve the equation.

19) $\sqrt{2x^2 + 5} = \sqrt{x^2 + 6x}$

A) $x = \frac{5}{2}, x = 3$

B) $x = 5, x = 1$

C) $x = \frac{5}{2}, x = -1$

D) $x = 3, x = -5$

Solve the inequality.

20) $10m^2 - 13m > 0$

A) $-\frac{13}{10} < x < 0$

B) $0 < x < \frac{13}{10}$

C) $x < 0$ or $x > \frac{13}{10}$

D) $x < -\frac{13}{10}$ or $x > \frac{13}{10}$