

Chapter 10
Form D

For problems 1 – 2, simplify each number.

1. $\sqrt{-100}$
a. $10i$ b. -10 c. 10 d. $\pm 10i$
2. $\sqrt{-32}$
a. -16 b. 16 c. $4\sqrt{2} i$ d. $-4\sqrt{2}$
3. Solve by the square root property: $(x-5)^2 = 49$.
a. $\{\pm 7\}$ b. $\{5\}$ c. $\{-2, 12\}$ d. $\{-12, 2\}$
4. Solve by completing the square: $x^2 - 4x + 2 = 0$.
a. $\{2 + \sqrt{2}\}$ b. $\{2 \pm \sqrt{2}\}$ c. $\{4\}$ d. $\{0, 4\}$
5. Solve by the quadratic formula: $2x^2 - 3x + 7 = 0$.
a. $\left\{\pm \frac{3}{4}\right\}$ b. $\left\{\frac{3 \pm i}{4}\right\}$ c. $\left\{\frac{3 \pm \sqrt{47}i}{4}\right\}$ d. $\{7, -1\}$

For problems 6 – 11, solve each equation by the method of your choice.

6. $9x^2 = 64$
a. $\left\{\pm \frac{9}{64}\right\}$ b. $\left\{\pm \frac{3}{8}\right\}$ c. $\left\{\pm \frac{8}{3}\right\}$ d. $\left\{\pm \frac{64}{9}\right\}$
7. $x^2 + x - 1 = 0$
a. $\left\{-1 \pm \sqrt{2}\right\}$ b. $\left\{\frac{1 \pm \sqrt{5}}{2}\right\}$ c. $\{1 \pm \sqrt{2}\}$ d. $\left\{\frac{-1 \pm \sqrt{5}}{2}\right\}$
8. $(x-15)^2 = 28$
a. $\{\pm 2\sqrt{7}\}$ b. $\{15\}$ c. $\{-15 \pm \sqrt{28}\}$ d. $\{15 \pm 2\sqrt{7}\}$
9. $(x-5)(2x+3) = -18$
a. $\left\{\frac{1}{2}, 3\right\}$ b. $\left\{-3, -\frac{1}{2}\right\}$ c. $\left\{-\frac{3}{2}, 5\right\}$ d. $\left\{-13, -\frac{21}{2}\right\}$

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10. $3x^2 - 4x = 6$

- a. $\left\{ \frac{-2 \pm 2\sqrt{22}}{3} \right\}$ b. $\left\{ \frac{2 \pm 2\sqrt{22}}{3} \right\}$ c. $\left\{ \frac{-2 \pm \sqrt{22}}{3} \right\}$ d. $\left\{ \frac{2 \pm \sqrt{22}}{3} \right\}$

11. $4x^2 - 8x + 5 = 0$

- a. $\{-1 \pm 4i\}$ b. $\left\{ \frac{2 \pm i}{2} \right\}$ c. $\left\{ -\frac{1}{2}, \frac{5}{2} \right\}$ d. $\left\{ -\frac{2 \pm i}{2} \right\}$

12. The vertex of $y = x^2 + 4x + 5$ are:

- a. $(-2, 1)$ b. $(2, 1)$ c. $(2, -1)$ d. $(1, 2)$

13. The x-intercepts of $y = x^2 + 4x + 5$ is:

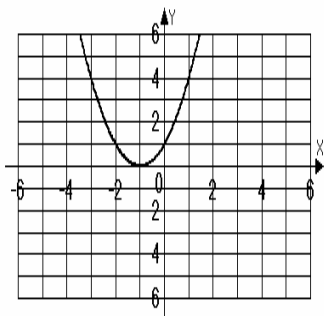
- a. 1 and 5 b. -1 and 5 c. -5 and -1 d. -5 and 1

14. The y-intercept of $y = x^2 + 2x - 1$ is:

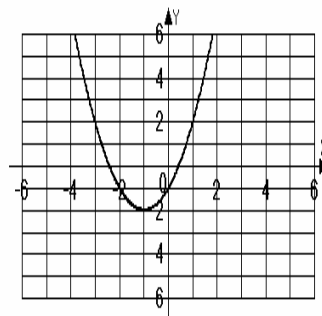
- a. approximately -2.4 and 0.4 b. 1
c. -1 d. -2

15. The graph of $y = x^2 + 2x - 2$ is:

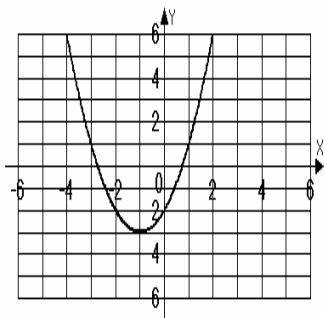
a.



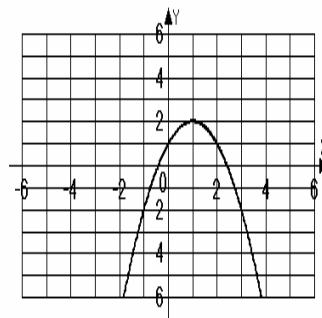
b.



c.



d.



For problems 16 – 17, Jafco Manufacturing estimates that its profits P (in hundreds of dollars) after producing x thousand units can be expressed as $P(x) = -3x^2 + 18x - 2$.

16. How many units must be produced to obtain the maximum profit?
a. 3 units b. 30 units c. 300 units d. 3000 units
17. What is the maximum profit?
a. \$216,200 b. \$2500 c. \$26,460,200 d. \$25
18. Is the relation $\{(4, 2)(7, 5)(4, 6)\}$ a function? Give the domain and range for the relation.
- | | |
|----------------------|-----------------------|
| a. No | b. Yes |
| Domain $\{4, 7\}$ | Domain: $\{4, 7\}$ |
| Range: $\{2, 5, 6\}$ | Range: $\{2, 5, 6\}$ |
| c. Yes | d. No |
| Domain $\{2, 5, 6\}$ | Domain: $\{2, 5, 6\}$ |
| Range: $\{4, 7\}$ | Range: $\{4, 7\}$ |
19. If $f(x) = -x^2 + x - 5$, find $f(1)$.
a. -11 b. -17 c. -3 d. -5
20. The distance, d , in feet that an object falls in t seconds is modeled by the formula $d = 16t^2$. If you drop a hammer from the roof of a house 49 feet above the ground, how long will it take the hammer to hit the ground?
a. $\pm \frac{7}{4}$ sec b. $\frac{7}{4}$ sec c. 0 sec d. $\frac{4}{7}$ sec