

**Chapter 9**  
**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.  $\{-1 \pm \sqrt{2}\}$                       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.  $\left\{-13, -\frac{21}{2}\right\}$

Name \_\_\_\_\_

Date \_\_\_\_\_

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  $y = x^2 + 4x + 5$  is:

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

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

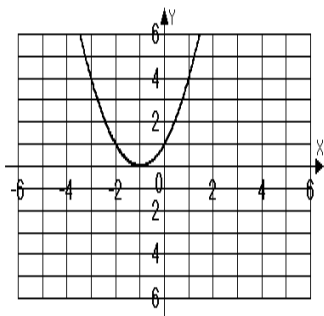
- a. 1 and 5    b.  $-1$  and 5    c.  $-5$  and  $-1$     d.  $-5$  and 1

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

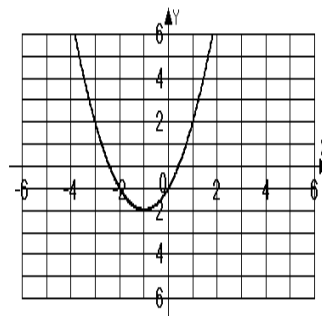
- a. approximately  $-2.4$  and  $0.4$     b. 1  
c.  $-1$     d.  $-2$

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

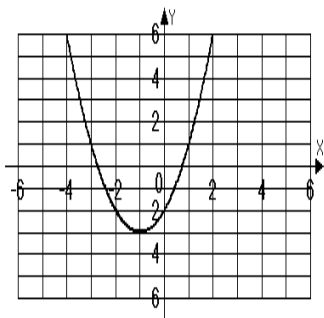
a.



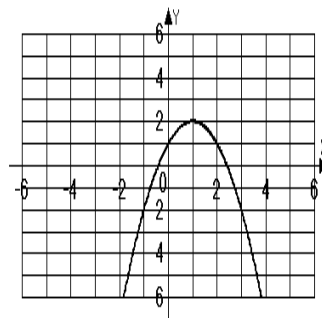
b.



c.



d.



Name \_\_\_\_\_

Date \_\_\_\_\_

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  
    Domain  $\{4, 7\}$   
    Range:  $\{2, 5, 6\}$   
b. Yes  
    Domain:  $\{4, 7\}$   
    Range:  $\{2, 5, 6\}$   
c. Yes  
    Domain  $\{2, 5, 6\}$   
    Range:  $\{4, 7\}$   
d. No  
    Domain:  $\{2, 5, 6\}$   
    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