Chapter 9 Test A

Simplify the expression.

1. $\sqrt{125m^7}$

2. $\sqrt{\dfrac{36x^4}{121}}$

3. $\sqrt{\dfrac{8y^5}{81x^6}}$

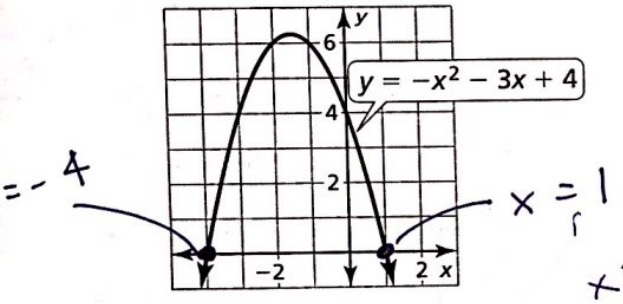
4. $\dfrac{4}{\sqrt{6}}$

5. $\dfrac{1}{\sqrt{3}+2}$

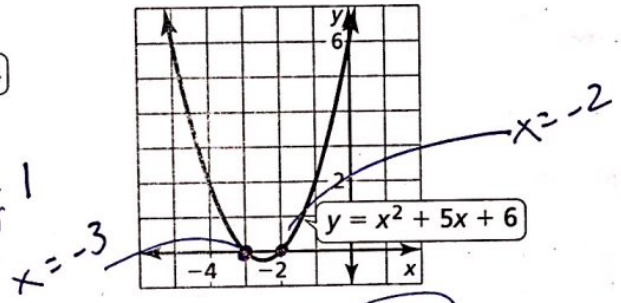
6. $3\sqrt{6} - 4\sqrt{24} + 2\sqrt{20}$

Use the graph to solve the equation. (IF Y = 0 THEN YOU ARE LOOKING FOR X-INTERCEPTS)

7. $-x^2 - 3x + 4 = 0$



8. $x^2 + 5x = -6$



Approximate the zeros of the function. Round to the nearest tenth.

9. $y = x^2 - 7x + 7$

10. $y = -2x^2 - 9x + 10$

Solve the equation by using square roots.

11. $2x^2 + 6 = 14$

12. $(x-1)^2 + 3 = 12$

Solve the equation by completing the square. Round to the nearest tenth, if necessary.

13. $x^2 + 6x = 7$

14. $x^2 - 4x = 10$

Write the function in vertex form by completing the square.

15. $y = x^2 + 2x + 1$

16. $y = -x^2 - 8x - 15$

Solve the equation using any method. Round to the nearest tenth, if necessary.

17. $x^2 - 144 = 0$

18. $x^2 - 6x = -8$

19. $2x^2 - 5x - 13 = 0$

20. $9x^2 + 48x = 36$

Answers

1. $5m^3\sqrt{5m}$
2. $\dfrac{6x^2}{11}$
3. $\dfrac{2y^2\sqrt{2y}}{9x^3}$
4. OMIT
5.
6. $-5\sqrt{6} + 4\sqrt{5}$
7. −4 and 1
8. −2 and −3
9. 5.8 and 1.2
10. −5.4 and 0.9
11. ±2
12. 4 and −2
13. 1 and −7
14. 5.7 and −1.7
15. $y = (x+1)^2$
16. $y = -(x+4)^2 + 1$
17. ±12
18. 4 and 2
19. 4.1 and −1.6
20. 0.7 and −6

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① $\sqrt{125m^7}$

$\sqrt{5\cdot 25\ mmmmmmm}$

$\sqrt{5\cdot 5\cdot 5\ m\cdot m\cdot m\cdot m\cdot m\cdot m\cdot m}$

$\boxed{5m^3\sqrt{5m}}$

② $\sqrt{\frac{36x^4}{121}}$ $\quad \frac{\sqrt{36x^4}}{\sqrt{121}} = \frac{6x^2}{11}$

$\sqrt{36x^4}$ $\quad \sqrt{121}$

$\sqrt{4\cdot 9\cdot x\cdot x\cdot x\cdot x}$ $\quad 11\ \sqrt{11\cdot 11}$

$2\cdot 3\ x\ x\ \sqrt{2\cdot 2\ 3\cdot 3\ x\cdot x\ x\cdot x}$

$2\cdot 3\cdot x\cdot x$

③ $\sqrt{\frac{8y^5}{81x^6}} = \frac{\sqrt{8y^5}}{\sqrt{81x^6}} = \boxed{\frac{2y^2\sqrt{2y}}{9x^3}}$

$\sqrt{8y^5}$ $\quad \sqrt{81x^6}$

$\sqrt{2\cdot 4\ yyyyy}$ $\quad 9$ $\quad \sqrt{9\cdot 9\cdot x\cdot x\cdot x\cdot x\cdot x\cdot x}$

$2\cdot y\ \sqrt{2\cdot 2\ 2\ yyyyy}$ $\quad 3\cdot 3\ x\ x\ x$ $\quad \sqrt{3\cdot 3\ 3\cdot 3\ x\ x\ x\ x\ x\ x}$

$2y^2\sqrt{2y}$ $\quad 9x^3$

will not simplify further

⑥ $3\sqrt{6} - 4\sqrt{24} + 2\sqrt{20}$

$-4\sqrt{6\cdot 4} + 2\sqrt{4\cdot 5}$

$-4\ 2\sqrt{2\cdot 3\ 2\cdot 2} + 2\ 2\sqrt{2\cdot 2\ 5}$

$3\sqrt{6} - 8\sqrt{6} + 4\sqrt{5}$

$\boxed{-5\sqrt{6} + 4\sqrt{5}}$

⑨ $y = x^2 - 7x + 7$

$a = 1$
$b = -7$
$c = 7$

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

$x = \frac{--7 \pm \sqrt{(-7)^2 - 4(1)(7)}}{2(1)}$

$x = \frac{7 \pm \sqrt{49 - 28}}{2}$

$x = \frac{7 \pm \sqrt{21}}{2}$

$\frac{7 + 4.58}{2}$ $\boxed{5.79}$ $\quad \frac{7 - 4.58}{2}$ $\boxed{1.21}$

⑩ $y = -2x^2 - 9x + 10$

$a = -2$
$b = -9$
$c = 10$

$x = \frac{--9 \pm \sqrt{(-9)^2 - 4(-2)(10)}}{2(-2)}$

$x = \frac{9 \pm \sqrt{81 + 80}}{-4}$

$x = \frac{9 \pm \sqrt{161}}{-4}$

$\frac{9 + 12.69}{-4} = \boxed{-5.4225}$ $\quad \frac{9 - 12.69}{-4}$ $\boxed{0.9225}$

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(11) $2x^2+6=14$
$\quad -6 \quad -6$

$\frac{2x^2}{2} = \frac{8}{2}$

$\sqrt{x^2} = \sqrt{4}$

$\boxed{x = \pm 2}$

(12) $(x-1)^2+3=12$
$\quad -3 \quad -3$

$\sqrt{(x-1)^2} = \sqrt{9}$

$x-1 = \pm 3$

$x-1=3 \qquad x-1=-3$
$+1 \quad +1 \qquad +1 \quad +1$

$\boxed{x = 4 \text{ and } x = -2}$

(13) $x^2+6x \underline{+9} = 7 \underline{+9}$

$\sqrt{(x+3)^2} = \sqrt{16}$

$x+3 = \pm 4$

$x+3=4 \qquad x+3=-4$
$-3 \quad -3 \qquad -3 \quad -3$

$\boxed{x=1 \text{ and } x=-7}$

(14) $x^2-4x \underline{+4} = 10 \underline{+4}$

$\sqrt{(x-2)^2} = \sqrt{14}$

$x-2 = \pm 3.7$
$+2 \qquad +2$

$\boxed{x = 5.7 \text{ and } -1.7}$

(15) $y = x^2+2x+1$

$y-1 \overset{+1}{=} x^2+2x+\underline{1}$

$y-0 = (x+1)^2$

$y = (x+1)^2$

(16) $\frac{y}{-1} = \frac{-x^2-8x-15}{-1}$

$-y = x^2+8x+15$

$-y-15 \underline{+16} = x^2+8x \underline{+16}$

$-y+1 = (x+4)^2$
$\quad -1 \qquad -1$

$\frac{-y}{-1} = \frac{(x+4)^2-1}{-1}$

$\boxed{y = -(x+4)^2+1}$

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(17) $x^2 - 144 = 0$

$\sqrt{x^2} = \sqrt{144}$

$\boxed{x = \pm 12}$

(18) $x^2 - 6x + 9 = -8 + 9$

$\sqrt{(x-3)^2} = \sqrt{1}$

$x - 3 = \pm 1$

$x - 3 = 1$
$+3 \quad +3$

$x - 3 = -1$
$+3 \quad +3$

$\boxed{x = 4 \text{ and } x = 2}$

(19) $2x^2 - 5x - 13 = 0$

$a = 2 \quad b = -5 \quad c = -13$

$x = \dfrac{--5 \pm \sqrt{(-5)^2 - 4(2)(-13)}}{2(2)}$

$\dfrac{5 \pm \sqrt{25 + 104}}{4}$

$\dfrac{5 \pm \sqrt{129}}{4}$

$\dfrac{5 \pm 11.4}{4}$

$\dfrac{5 + 11.4}{4}$ $\qquad$ $\dfrac{5 - 11.4}{4}$

$\dfrac{16.4}{4} = \boxed{4.1}$ $\qquad$ $\dfrac{-6.4}{4} = \boxed{-1.6}$

(20) $9x^2 + 48x = 36$

$9x^2 + 48x - 36 = 0$

$a = 9 \quad b = 48 \quad c = -36$

$x = \dfrac{-48 \pm \sqrt{(48)^2 - 4(9)(-36)}}{2(9)}$

$\dfrac{-48 \pm \sqrt{2304 + 1296}}{18}$

$\dfrac{-48 \pm \sqrt{3600}}{18}$

$\dfrac{-48 \pm 60}{18}$

$\dfrac{-48 + 60}{18}$ $\qquad$ $\dfrac{-48 - 60}{18}$

$\dfrac{12}{18}$ $\qquad$ $\dfrac{-108}{18}$

$\boxed{0.7 \text{ and } -6}$

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