Name: __KEY__

Date: _____ Period: ___

Simplify.

1.) $\sqrt{-32}$

$\sqrt{-1}\ \sqrt{16}\sqrt{2}$

$i \cdot 4 \cdot \sqrt{2}$

$\boxed{4i\sqrt{2}}$

2.) $\sqrt{20}$

$\sqrt{4}\ \sqrt{5}$

$\boxed{2\sqrt{5}}$

3.) $\sqrt{-60}$

$\sqrt{-1}\ \sqrt{4}\ \sqrt{15}$

$i \cdot 2 \cdot \sqrt{15}$

$\boxed{2i\sqrt{15}}$

4.) $\sqrt{75}$

$\sqrt{25}\ \sqrt{3}$

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

5.) $\sqrt{72}$

$\sqrt{36}\sqrt{2}$

$\boxed{6\sqrt{2}}$

6.) $\sqrt{-9}$

$\sqrt{-1}\ \sqrt{9}$

$i \cdot 3$

$\boxed{3i}$

7.) $\sqrt{56}$

$\sqrt{4}\ \sqrt{14}$

$\boxed{2\sqrt{14}}$

8.) $\sqrt{-30}$

$\sqrt{-1}\ \sqrt{30}$

$\boxed{i \cdot \sqrt{30}}$

9.) $\sqrt{-4}$

$\sqrt{-1}\ \sqrt{4}$

$i \cdot 2$

$\boxed{2i}$

10.) $\sqrt{80}$

$\sqrt{16}\ \sqrt{5}$

$\boxed{4\sqrt{5}}$

11.) $\sqrt{-33}$

$\sqrt{-1}\ \sqrt{33}$

$\boxed{i \cdot \sqrt{33}}$

12.) $\sqrt{-24}$

$\sqrt{-1}\ \sqrt{4}\ \sqrt{6}$

$i \cdot 2 \cdot \sqrt{6}$

$\boxed{2i\sqrt{6}}$

Simplify. Leave answers in simplified radical form.

13.) $x = \dfrac{-(-3)\pm\sqrt{(-3)^2-4(8)(2)}}{2(8)}$

$x = \dfrac{3 \pm \sqrt{9-64}}{16}$

$x = \dfrac{3 \pm \sqrt{-55}}{16}$

$\boxed{x = \dfrac{3 \pm i\sqrt{55}}{16}}$

14.) $x = \dfrac{-(12)\pm\sqrt{(12)^2-4(3)(-7)}}{2(3)}$

$x = \dfrac{-12 \pm \sqrt{144+84}}{6}$

$x = \dfrac{-12 \pm \sqrt{228}}{6}$

$x = \dfrac{-12 \pm \sqrt{4}\sqrt{57}}{6}$

$x = \dfrac{-12 \pm 2\sqrt{57}}{6}$

$\boxed{x = \dfrac{-6 \pm \sqrt{57}}{3}}$

15.) $x = \dfrac{-(10)\pm\sqrt{(10)^2-4(5)(7)}}{2(5)}$

$x = \dfrac{-10 \pm \sqrt{100-140}}{10}$

$x = \dfrac{-10 \pm \sqrt{-40}}{10}$

$x = \dfrac{-10 \pm \sqrt{-1}\sqrt{4}\sqrt{10}}{10}$

$x = \dfrac{-10 \pm 2i\sqrt{10}}{10}$

$\boxed{x = \dfrac{-5 \pm i\sqrt{10}}{5}}$

16.) $x = \dfrac{-(-6)\pm\sqrt{(-6)^2-4(-3)(-5)}}{2(-3)}$

$x = \dfrac{6 \pm \sqrt{36-60}}{-6}$

$x = \dfrac{6 \pm \sqrt{-24}}{-6}$

$x = \dfrac{6 \pm \sqrt{-1}\sqrt{4}\sqrt{6}}{-6}$

$x = \dfrac{6 \pm 2i\sqrt{6}}{-6}$

$\boxed{x = \dfrac{3 \pm i\sqrt{6}}{-3}}$

Evaluate.

17.) If $f(x) = -2x^2 - 4x + 7$, find $f(3)$.

$f(3) = -2(3)^2 - 4(3) + 7$

$= -2(9) - 4(3) + 7$

$= -18 - 12 + 7$

$\boxed{= -23}$

18.) If $g(x) = 3x^2 + 5x - 4$, find $g(-4)$.

$g(-4) = 3(-4)^2 + 5(-4) - 4$

$= 3(16) + 5(-4) - 4$

$= 48 - 20 - 4$

$= 28 - 4$

$\boxed{= 24}$

19.) If $h(x) = -x^2 + 3x$, find $h(m + 2)$.

$h(m+2) = -(m+2)^2 + 3(m+2)$

$= -(m+2)(m+2) + 3(m+2)$

$= -(m^2 + 4m + 4) + 3(m+2)$

$= -m^2 - 4m - 4 + 3m + 6$

$\boxed{= -m^2 - m + 2}$

20.) If $c(x) = 2x^2 - 6x - 11$, find $c(t - 3)$.

$c(t-3) = 2(t-3)^2 - 6(t-3) - 11$

$= 2(t-3)(t-3) - 6(t-3) - 11$

$= 2(t^2 - 6t + 9) - 6(t-3) - 11$

$= 2t^2 - 12t + 18 - 6t + 18 - 11$

$\boxed{= 2t^2 - 18t + 25}$

Review.

21.) Simplify. $\quad \frac{2}{3} + 3\left(2 - \frac{1}{4}\right) - 2$

$= \frac{2}{3} + 3\left(\frac{8}{4} - \frac{1}{4}\right) - 2$

$= \frac{2}{3} + 3\left(\frac{7}{4}\right) - 2$

$= \frac{2}{3} + \frac{21}{4} - 2$

$= \frac{8}{12} + \frac{63}{12} - \frac{24}{12} \qquad \boxed{= \frac{47}{12}}$

22.) Factor. $\qquad 4x^2 - 16x + 9$

$\underset{-16}{\overset{36}{\diagup\!\!\!\!\diagdown}}$

PRIME

23.) Solve. $\qquad \underset{-5}{5} - 3(m-4)^2 \underset{-5}{= 41}$

$\dfrac{-3(m-4)^2}{-3} = \dfrac{36}{-3}$

$(m-4)^2 = -12$

$m - 4 = \pm\sqrt{-12}$

$m - 4 = \pm 2i\sqrt{3}$

$\boxed{m = 4 \pm 2i\sqrt{3}}$

24.) Given $(-3, 2)$ & $(6, 5)$ lie on a line write an equation in slope-intercept form.

$m = \dfrac{5-2}{6-(-3)} = \dfrac{3}{9} = \dfrac{1}{3}$

$y = mx + B \qquad$ or $\quad y - y_1 = m(x - x_1)$

$5 = \left(\frac{1}{3}\right)(6) + B \qquad\quad y - 5 = \frac{1}{3}(x - 6)$

$5 = 2 + B \qquad\qquad\quad y - 5 = \frac{1}{3}x - 2$

$3 = B \qquad\qquad\qquad\quad \boxed{y = \frac{1}{3}x + 3}$

$\boxed{y = \frac{1}{3}x + 3}$