

Each of the 18 questions is worth 5 points plus 1 points for each of 10 homework problems for a total of 100

**Simplify the root.**

1) -  $\sqrt[3]{x^{21}}$

**Simplify by first converting to rational exponents. Assume that all variables represent positive real numbers.**

2)  $\sqrt[4]{49z^{14}}$

**Use the rules of exponents to simplify the expression. Write the answer with positive exponents. Assume that all variables represent positive real numbers.**

3)  $\frac{x^{1/2}}{x^{3/4} \cdot x^{-4}}$

**Express the radical in simplified form.**

4)  $\sqrt[3]{750}$

**Express the radical in simplified form. Assume that all variables represent positive real numbers.**

5)  $\sqrt[3]{\frac{y^7}{216}}$

**Simplify. Assume that all variables represent positive real numbers.**

6)  $7\sqrt{5} + 6\sqrt{45}$

$$7) 7\sqrt[5]{m^{11}p^7} - 3m^2p\sqrt[5]{mp^2}$$

**Multiply, then simplify the product. Assume that all variables represent positive real numbers.**

$$8) (2 - 3\sqrt{5})^2$$

**Rationalize the denominator. Assume that all variables represent positive real numbers and that the denominator is not zero.**

$$9) \frac{\sqrt{5}}{5\sqrt{6} - \sqrt{5}}$$

**Solve the equation.**

10)  $\sqrt{2k + 1} = 19$

**Solve this equation.**

11)  $\sqrt{2x + 15} - x = 6$

**Multiply or divide as indicated.**

12)  $\frac{\sqrt{-225}}{\sqrt{-9}}$

**Add or subtract as indicated. Write your answer in the form  $a + bi$ .**

13)  $[(7 + 4i) - (3 + 7i)] - (6 - 8i)$

**Use the quadratic formula to solve the equation. (All solutions are real numbers.)**

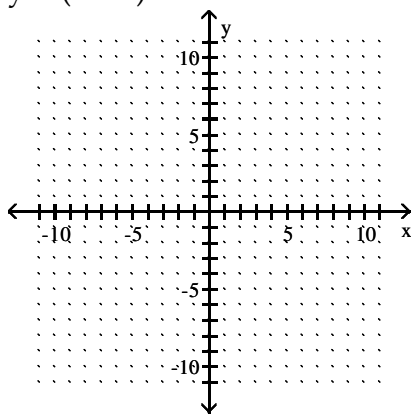
14)  $x^2 = 9 - 4x$

**Use the quadratic formula to solve the equation.**

15)  $x^2 - \frac{4}{3}x = -\frac{7}{6}$

**Sketch the graph of the parabola.**

16)  $y = (x - 2)^2 + 5$



**Identify the vertex of the given parabola.**

17)  $f(x) = (x + 3)^2 + 6$

**Sketch the graph of the parabola.**

18)  $y = x^2 + 3$

