Alg 2

PRACTICE TEST Solutions

Ch 6 Test

Simplify each radical expression.

1. $\sqrt{81x^6y^{10}}$

$\sqrt{81}\sqrt{x^6}\sqrt{y^{10}}$

$9x^3y^5$

2. $\sqrt[3]{27y^{12}}$

$\sqrt[3]{27}\sqrt[3]{y^{12}}$

$3y^4$

3. $\sqrt[4]{625x^{16}}$

$\sqrt[4]{625}\sqrt[4]{x^{16}}$

$5x^4$

Multiply and simplify.

4. $\sqrt{3x^7}\sqrt{21x}$

$\sqrt{3\cdot 21\cdot x^7\cdot x}$

$\sqrt{63\cdot x^8}$

$\sqrt{9}\sqrt{7}\sqrt{x^8}$

$3x^4\sqrt{7}$

5. $\sqrt[3]{6x}\sqrt[3]{9x^7}$

$\sqrt[3]{54x^8}$

$\sqrt[3]{27\cdot 2\cdot x^6\cdot x^2}$

$3x^2\sqrt[3]{2x^2}$

Rationalize each denominator. Simplify your answer

6. $\frac{\sqrt{x}}{\sqrt{11}}\cdot\frac{\sqrt{11}}{\sqrt{11}}$

$\frac{\sqrt{11x}}{11}$

7. $\frac{\sqrt[3]{7}}{\sqrt[3]{3x^2}}\cdot\frac{\sqrt[3]{3x^2}}{\sqrt[3]{3x^2}}\cdot\frac{\sqrt[3]{3x^2}}{\sqrt[3]{3x^2}}$

$\frac{\sqrt[3]{63x^4}}{3x^2} = \frac{x\sqrt[3]{63x}}{3x^2}$

$\frac{\sqrt[3]{63x}}{3x}$

Multiply. Express the product in polynomial form.

8. $(3+\sqrt{7})^2$

$9+6\sqrt{7}+7$

$16+6\sqrt{7}$

9. $(4+\sqrt{5})(3-\sqrt{5})$

$12-4\sqrt{5}+3\sqrt{5}-5$

$7+\sqrt{5}$

Simplify.

10. $81^{\frac{3}{4}}$

$(81^{1/4})^3$

$(3)^3$

27

11. $25^{\frac{3}{2}}$

$(25^{1/2})^3$

$(5)^3$

125

Write each expression in simplest form.

12. $\left(x^{\frac{5}{2}}\right)^4$

$x^{\frac{5}{2}\cdot\frac{4}{1}}$

x^{10}

13. $\left(x^{\frac{5}{6}}y^{\frac{1}{4}}\right)^{12}$

$x^{(\frac{5}{6})(12)}\ y^{(\frac{1}{4})(12)}$

$x^{10}y^{3}$

Solve.

14. $\sqrt{2x+5} = 11$

$2x+5 = 121$

$2x = 116$

$x = 58$

15. $(x-7)^{\frac{2}{3}} = 36$

$\left[(x-7)^{2/3}\right]^{3/2} = (36)^{3/2}$

$x-7 = 216$

$x = 223$

Let $f(x) = x + 7$ and $g(x) = 3 - x$. Perform the operations, simplify, & state any restrictions

16. $(f-g)(x)$

$x+7-3+x$

$2x+4$

17. $(f \cdot g)(x)$ $(x+7)(3-x)$

$3x - x^2 + 21 - 7x$

$-x^2 - 4x + 21$

18. $\left(\frac{f}{g}\right)(x)$ $\frac{x+7}{3-x}$

$\frac{x+7}{3-x}, \; x \neq 3$

Let $f(x) = 5x - 1$ and $g(x) = x^2 + 4$. Find each value or expression.

19. $(f \circ g)(x)$

$5(x^2+4) - 1$

$5x^2 + 20 - 1$

$5x^2 + 19$

20. $(g \circ f)(3)$

$(5x-1)^2 + 4$

$25x^2 - 10x + 1 + 4$

$(g \circ f)(x) = 25x^2 - 10x + 5$

$25(9) - 10(3) + 5$

$225 - 30 + 5$

200