

Review of the unit....If you can do everything, you'll be fine for the quiz on Monday!

Simplify.

$$1) \frac{\sqrt{128v^4}}{8v^2\sqrt{2}}$$

$$2) \frac{-12\sqrt[3]{48a^{11}b^3}}{-24a^3b\sqrt[3]{6a^2}}$$

$$3) \frac{-14\sqrt[5]{96x^6}}{-28x\sqrt[5]{3x}}$$

$$4) \frac{-2\sqrt{20m^3}}{-4m\sqrt{5m}}$$

$$5) \frac{\sqrt[3]{-250p^2q^2r^6}}{-5r^2\sqrt[3]{2p^2q^2}}$$

$$6) \frac{\sqrt{128x^4y^2z^5}}{8x^2z^2y\sqrt{2z}}$$

$$7) \frac{3\sqrt{27} + 2\sqrt{3}}{11\sqrt{3}}$$

$$8) \frac{-3\sqrt{45} + 3\sqrt{20}}{-3\sqrt{5}}$$

$$9) \frac{-\sqrt{24} - 3\sqrt{3} - 2\sqrt{3}}{-2\sqrt{6} - 5\sqrt{3}}$$

$$10) \frac{-2\sqrt{8} - \sqrt{18} - 3\sqrt{2}}{-10\sqrt{2}}$$

$$11) \frac{-2\sqrt{15} \cdot \sqrt{6}}{-6\sqrt{10}}$$

$$12) \frac{\sqrt{8} \cdot \sqrt{10}}{4\sqrt{5}}$$

Simplify. Your answer should contain only positive exponents.

$$13) \frac{a^4b^2 \cdot 6b^{-5}}{b^3}$$

$$14) \frac{(x^4y^{-4} \cdot x^{-6})^5}{y^{20}x^{10}}$$

$$15) (2x^3y^4)^4 \cdot x^{-2}y^3$$

$$16y^{19}x^{10}$$

$$16) \frac{5x^{-4}y^{-6}}{x^{-5}y^2}$$

$$\frac{5x}{y^8}$$

$$17) \frac{(m^{-6}n^{-6})^{-4}}{(m^4n^5)^3}$$

$$m^{12}n^9$$

$$18) \left(\frac{x^4y^4}{y^6}\right)^3$$

$$\frac{x^{12}}{y^6}$$

$$19) 5^{4\sqrt{2}}$$

$$20) 3^{2x-2}$$

$$21) 2^{1/2} x^2 y^{9/2}$$

$$22) 7^{\sqrt{10}}$$

Express using rational exponents or radicals

$$23) 81^{1/3} a^{4/3} b^2$$

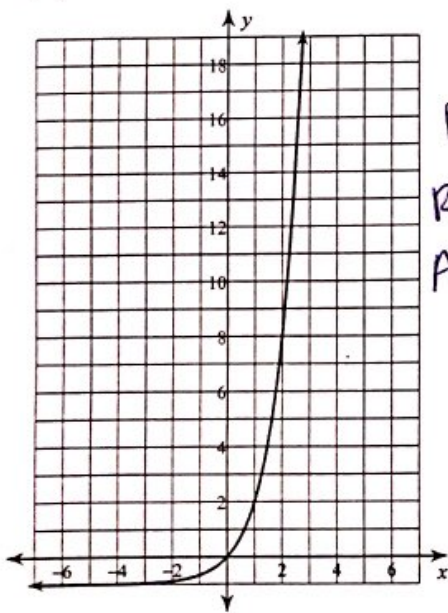
$$24) \sqrt[4]{16a^3b^8} \text{ or } 4ab^4\sqrt[4]{a}$$

$$25) 64^{1/4} xy^{3/2}$$

$$26) \sqrt[3]{8x^2y^5} \text{ or } 2y\sqrt[3]{x^2y^2}$$

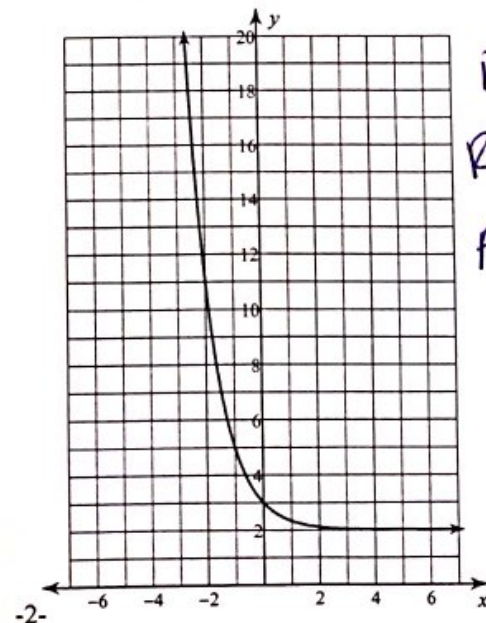
Sketch the graph of each function. State the domain, range, and asymptote.

$$27) y = 3^x - 1$$



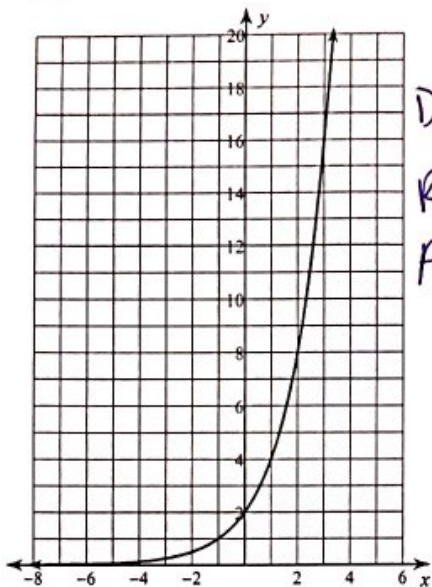
D: $(-\infty, \infty)$
R: $(-1, \infty)$
Asym: $y = -1$

$$28) y = \left(\frac{1}{3}\right)^x + 2$$



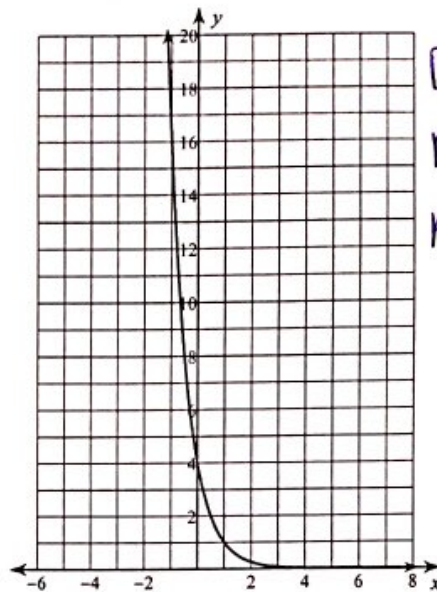
D: $(-\infty, \infty)$
R: $(2, \infty)$
Asym: $y = 2$

29) $y = 2^{x+1}$



D: $(-\infty, \infty)$
 R: $(0, \infty)$
 Asym:
 $y = 0$

30) $y = \left(\frac{1}{4}\right)^{x-1}$



D: $(-\infty, \infty)$
 R: $(0, \infty)$
 Asym:
 $y = 0$

Solve each equation.

31) $4^{3a-3} = 4^3$

{2}

32) $\left(\frac{1}{4}\right)^x = 64^{3x}$

{0}

33) $\left(\frac{1}{16}\right)^{n+2} = 8$

$\left\{-\frac{11}{4}\right\}$

34) $64^{-3x} = \frac{1}{32}$

$\left\{\frac{5}{18}\right\}$

35) $\left(\frac{1}{4}\right)^{3x-1} = \left(\frac{1}{64}\right)^{-x}$

$\left\{\frac{1}{6}\right\}$

36) $36^{-2n+2} = \left(\frac{1}{6}\right)^{2n}$

{2}

Rewrite each equation in exponential form.

37) $\log_{17} 17 = 1$

$17^1 = 17$

38) $\log_{11} \frac{1}{121} = -2$

$11^{-2} = \frac{1}{121}$

Rewrite each equation in logarithmic form.

$$39) 3^{-4} = \frac{1}{81}$$

$$\log_3 \frac{1}{81} = -4$$

$$40) 3^4 = 81$$

$$\log_3 81 = 4$$

Expand each logarithm.

$$41) \log_3 (a^3 b^6)$$

$$3 \log_3 a + 6 \log_3 b$$

$$42) \log_6 \frac{x^4}{y^5}$$

$$4 \log_6 x - 5 \log_6 y$$

Condense each expression to a single logarithm.

$$43) 3 \log_3 x + 6 \log_3 y$$

$$\log_3 (y^6 x^3)$$

$$44) 6 \log_3 x - 5 \log_3 y$$

$$\log_3 \frac{x^6}{y^5}$$

Evaluate each expression without a calculator.

$$45) \log_3 9$$

$$2$$

$$46) \log_3 \frac{1}{243}$$

$$-5$$

$$47) \log_{49} 7$$

$$\frac{1}{2}$$

$$48) \log_6 \frac{1}{36}$$

$$-2$$