Bellwork Alg 2B Tuesday, January 23, 3018

1. Simplify each. Assume all variables are positive.

a) $\sqrt[3]{6m^5p^2} \cdot \sqrt[3]{12m^2p^7}$

b) $\dfrac{\sqrt{3g^7h^3}}{\sqrt{108g^3h^9}}$

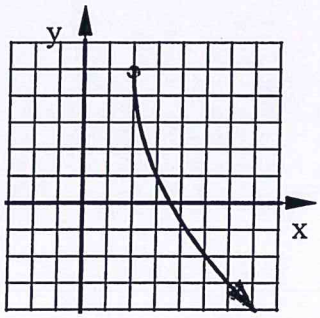
2. Simplify each. Use absolute value symbols when necessary.

a) $\sqrt[4]{80a^{15}b^{26}}$

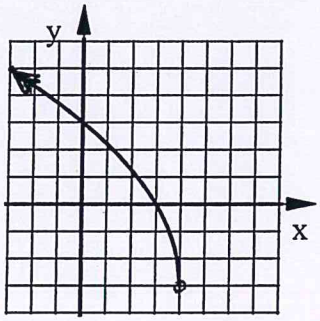
b) $\sqrt[3]{54c^{16}d^8}$

3. Write the equation of each function.

a)



b)



4. Write the equation of the inverse relation to $f(x)$. $f(x) = \dfrac{2(3x-1)^5+6}{7}$

5. Solve. $\log x + \log(x+15) = 2$

6. Use all three properties of logarithms to expand this logarithmic expression. $\log_2\left(\dfrac{W^4\sqrt{G^5}}{D^8E^3}\right)$

7. State the percent change is modeled in this exponential equation. $y = 2048(0.809)^x$

8. Use the given information to write the equation of this parabola: Focus: $(9,-4)$ Directrix: $x = 2$

9. State the next three terms of this sequence: $\frac{6}{31}, \frac{-6}{37}, \frac{-12}{49}, \frac{36}{67}, \ldots$

10. Write the explicit formula for this sequence: $0, \frac{1}{42}, \frac{4}{48}, \frac{9}{54}, \frac{16}{60} \ldots$

ALG 2B Bellwork — Answers — Tue 1-23-18

(1) a) $\sqrt[3]{6m^5p^2} \cdot \sqrt[3]{12m^2p^7}$

$= \sqrt[3]{72m^7p^9}$

$= \sqrt[3]{8 \cdot 9\, m^7p^9}$

$= \boxed{2m^2p^3\sqrt[3]{9m}}$

b) $\dfrac{\sqrt{3g^7h^3}}{\sqrt{108g^3h^9}} = \dfrac{\sqrt{g^4}}{\sqrt{36h^6}}$

$= \boxed{\dfrac{g^2}{6h^3}}$

(2) a) $\sqrt[4]{80a^{15}b^{26}}$

$= \sqrt[4]{16 \cdot 5\, a^{15}b^{26}}$

$= \boxed{2|a^3|\,b^6\sqrt[4]{5a^3b^2}}$

b) $\sqrt[3]{54c^{16}d^8}$

$= \sqrt[3]{27 \cdot 2\, c^{16}d^8}$

$= \boxed{3c^5d^2\sqrt[3]{2cd^2}}$

(3) a) 2 right 5 up
upside down
4x Taller

$\boxed{y = -4\sqrt{x-2} + 5}$

b) 4 Right 3 down
Backwards
3x taller

$\boxed{y = 3\sqrt{-(x-4)} - 3}$

(4) $f(x) = \dfrac{2(3x-1)^5 + 6}{7}$

$\boxed{f^{-1} = \dfrac{\sqrt[5]{\dfrac{7x-6}{2}} + 1}{3}}$

(5) $\log x + \log(x+15) = 2$

$\log x(x+15) = 2$

$10^2 = x(x+15)$

$100 = x^2 + 15x$

$0 = x^2 + 15x - 100$

$0 = (x+20)(x-5)$

$x = -20, 5$

$\boxed{x = 5}$

-100
20 -5
+15

(6) $\log_2\left(\frac{w^4\sqrt{6^5}}{D^8 E^3}\right) = 4\log_2 W + \frac{5}{2}\log_2 6 - 8\log_2 D - 3\log_2 E$

(7) $y = 2048\,(0.809)^x$

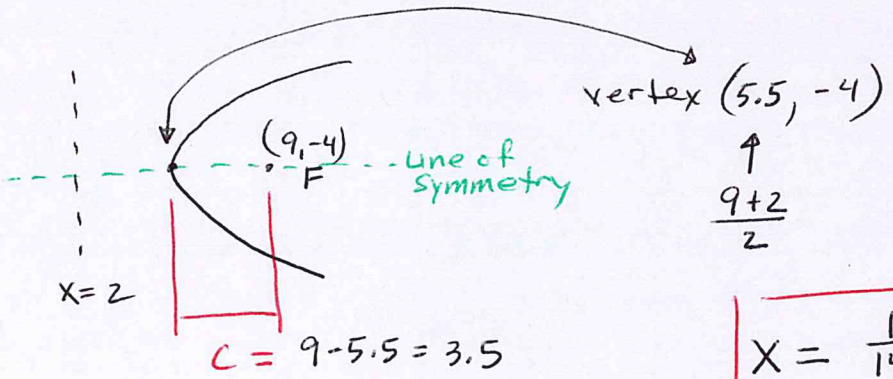
$\times 100$

80.9%

80.9 − 100 = −19.1

19.1% decrease

(8)



$\frac{9+2}{2}$

$c = 9 - 5.5 = 3.5$

$a = \frac{1}{4(3.5)} = \frac{1}{14}$

$x = \frac{1}{14}(y+4)^2 + 5.5$

(9) $\frac{6}{31}, \frac{-6}{37}, \frac{-12}{49}, \frac{36}{67}, \ldots, \frac{144}{91}, \frac{-720}{121}, \frac{-4320}{157}$

$\times(-1)$, $\times(2)$, $\times(-3)$, $\times(4)$, $\times(-5)$, $\times(6)$

+6, +12, +18, +24, +30, +36

(10) $n = 1, 2, 3, 4, 5$

$\frac{0^2}{0}, \frac{1^{(1)^2}}{42}, \frac{4^{(2)^2}}{48}, \frac{9^{(3)^2}}{54}, \frac{16^{(4)^2}}{60}$

$6(7)$, $6(8)$, $6(9)$, $6(10)$

$\frac{0}{36}$ $6(6)$

$a_n = \frac{(n-1)^2}{6(n+5)}$ or $\frac{(n-1)^2}{36+6(n-1)}$

numerators → perfect squares

denominators — multiples of 6 or arithmetic sequence $d = 6$