

$$\frac{-10x^{13}}{2x^2} = -5x^{11}$$

$$\frac{-4x^7}{2x^2} = -2x^5$$

$$(-4)^0 = 1$$

$$-4^0 = -1$$

$$\begin{aligned} \left(\frac{4x^{-2}y^2}{12x^{-4}y^{-1}} \right)^3 &= \left(\frac{1}{3} x^{-2-(-4)} y^{2-(-1)} \right)^3 \\ &= \left(\frac{1}{3} x^2 y^3 \right)^3 = \frac{1^3}{3^3} (x^2)^3 (y^3)^3 \\ &= \frac{1}{27} x^6 y^9 \end{aligned}$$

$$(y^3)^3 = (y^3)(y^3)(y^3) = y^{3+3+3} = y^9$$

$$y^{3(3)} = y^9$$

$$\left(\frac{5x^{-3}y^4}{10x^4y^{-3}} \right)^2 = \left(\frac{1}{2} x^{-3-4} y^{4-(-3)} \right)^2$$

$$= \left(\frac{1}{2} x^{-7} y^7 \right)^2 = \frac{1}{2} x^{-14} y^{14}$$

Common Error.

None

$$\left(\frac{1}{2} \right)^2 x^{-14} y^{14} = \frac{1^2}{2^2} x^{-14} y^{14}$$

$$= \frac{y^{14}}{4x^{14}}$$

$$(4x^4y^5)^2 (x^6y^1)^{-3}$$

$$(4^2 (x^4)^2 (y^5)^2) ((x^6)^{-3} (y^1)^{-3})$$

$$= 16x^{(4)(2)} y^{(5)(2)} x^{(6)(-3)} y^{(1)(-3)}$$

$$= (4^2 x^8 y^{10}) (x^{-18} y^{-3})$$

$$16x^{8-18} y^{10-3} = 16x^{-10} y^7 = \frac{16y^7}{x^{10}}$$

$$x^6 x^7 = x^{6+7} = x^{13}$$

$$(-7)^6 (-7)^7 = (-7)^{13}, \text{ NOT } 49^{13}$$

$$\frac{14.2 \times 10^{-5}}{4 \times 10^{-4}} = \frac{14.2}{4} \times 10^{-5-(-4)}$$

$$= 3.55 \times 10^{-1}$$

$$(9 \times 10^5) (3.7 \times 10^{11})$$

$$33.3 \times 10^{16}$$

$$3.33 \times 10^1 \times 10^{16}$$

$$3.33 \times 10^{17}$$

$$\frac{240,000}{.00008} = \frac{2.4 \times 10^5}{8 \times 10^{-5}} = .3 \times 10^{5-(-5)}$$

Bealib, Edward

$$= .3 \times 10^{10} = 3 \times 10^{-1} \times 10^{10} = 3 \times 10^9$$

$$(x^y)^z = x^{yz}$$

$$(x^{3a+8})^9 = x^{(3a+8)(9)} = x^{27a+72}$$

$$x^{\boxed{9(3a+8)}} = x^{\boxed{27a+72}}$$

$$(7x^{3a+8})^9 = 7^9 (x^{3a+8})^9 = 7^9 x^{27a+72}$$

Solve by factoring.

$$x^2 - 7x + 12 = 0$$

$$(x - 3)(x - 4) = 0$$

$$x \in \{3, 4\}$$

$$x^3 - 8 = 0$$

$$x^3 - 2^3 = 0$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$(x-2)(x^2 + 2x + 2^2) = 0$$

↪ This is NEVER zero.

So, $x-2=0$

$$x=2$$

OR

$$x \in \{2\}$$

$$27x^3 - 125$$

$$= 3^3 x^3 - 5^3 = (3x)^3 - 5^3$$

$$= (3x-5)((3x)^2 + (3x)(5) + 5^2)$$

8 p/s

$$= (3x-5)(3^2 x^2 + 15x + 25)$$

$$= (3x-5)(9x^2 + 15x + 25)$$