Trig 3.8

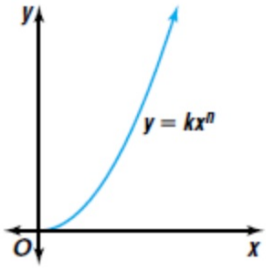
* Alg 1 Ch. 5
**Alg 2 Ch. 9

Solve problems involving direct*, inverse**, joint** variation

direct variation $\uparrow A = kB \uparrow$

inverse variation $\downarrow A = \frac{k}{B} \uparrow$

constant of variation k



directly proportional

inversely proportional

joint variation (combined) $A = \frac{k \cdot B \cdot C^3}{\sqrt{D}}$

activity: whiteboards (if time)

Solve for y...*

State in words

"varies directly as..." $A = kB$

"varies inversely as..." $A = \frac{k}{B}$

"varies jointly as..." $A = \frac{kB}{C}$

* Unless it is already solved for something else, i.e. A, C, etc...

Write a statement of variation relating the variables of each equation. Then name the constant of variation.

9. $\frac{x^4}{y} = \frac{7}{1}$

$\frac{7y}{7} = \frac{1x^4}{7}$

$y = \frac{1}{7}x^4$

y varies dir. as x^4

$k = \frac{1}{7}$

10. $A = 1\ell w$

area varies jointly with ℓ + w. $k = 1$

11. $x = \frac{-3}{y}$

x varies inversely as y. $k = -3$

Write a statement of variation relating the variables of each equation. Then name the constant of variation.

25. $C = \pi d$

C varies dir. as d. $k = \pi$

26. $\frac{x}{y} = 4$

$\frac{y}{1}$

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

$y = \frac{1}{4}x$

27. $\frac{1}{2}xz^2 = \frac{3}{4}y \cdot \frac{4}{3}$

$y = \frac{4}{2}xz^2$

Solve for y...(or something)
Might be more than one correct answer

28. $V = \frac{4}{3}\pi r^3$

29. $4x^2 = \frac{5}{y}$

$y \cdot 4x^2 = 5$

$y = \frac{5}{4x^2}$

30. $y = \frac{2}{\sqrt{x}}$

31. $A = 0.5h(b_1 + b_2)$

32. $y = \frac{x}{3z^2}$

$= \frac{1}{3}\frac{x}{z^2}$

7.

33. $\frac{1}{7}y = \frac{x^2}{z^3}$ .7

$y = 7 \cdot \frac{x^2}{z^3}$

WB 3.8