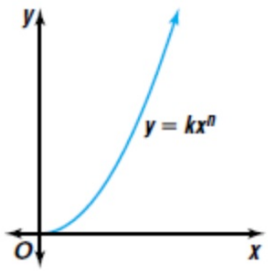
Trig 3.8

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

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

direct variation $y = kx$

inverse variation $y = \frac{k}{x}$



constant of variation

directly proportional

inversely proportional

joint variation $y = k\frac{xy}{z}$

activity: whiteboards (if time)

Solve for y...*
State in words
"varies directly as..."
"varies inversely as..."
"varies jointly as..."

( ) and inversely as . . .

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

$7y = x^4$

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

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

10. $A = \ell w$

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

$xy = -3$

$\frac{xy}{x} = \frac{-3}{x}$

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

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

25. $C = \pi d$

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

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

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

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

$y = \frac{4}{3}xz^2$

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

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

29. $\frac{4x^2}{1} = \frac{5}{y}$

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

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

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

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

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

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

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

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

$x = 3$

$x - 3 = 0$

$$x-3 \overline{)\,1x^2+5x-7}$$

$$\begin{array}{r|rrr} 3 & 1 & 5 & -7 \\ & \downarrow & 3 & 24 \\ \hline & 1 & 8 & \cancel{17} \end{array}$$

$y = x + 8$

$$x-3 \overline{)\,x^2+5x-7} \qquad x+8+\frac{17}{x-3}$$

$-x^2+3x$

$8x-7$

$-8x+24$

17

$$\frac{x^3+5x}{x^2-1}$$

( )x+1

( )x+1