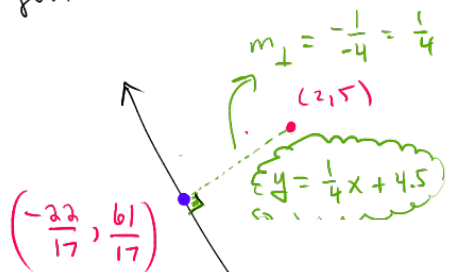


Thursday -

To find distance b/w a point & a line.



1. distance = length of segment that

(i) has 90° intersection

(ii) passes through $(2, 5)$

$y = \frac{1}{4}x + 4.5$
so

2. Recipe: need slope & point $\Rightarrow$

$y = mx + b$
 $5 = \frac{1}{4}(2) + b$
 $4.5 = b$

set eqns equal

$y = -4x - 1$
 $\Rightarrow$ slope = -4

Fact: parallel lines have same slope, m
perpendicular lines have negative reciprocal slope $-\frac{1}{m}$

$4\left(\frac{1}{4}x + \frac{9}{2}\right) = (-4x - 1)4$

$x + 18 = -16x - 4$

$17x = -22$

$x = -\frac{22}{17} \Rightarrow y = -4\left(-\frac{22}{17}\right) - 1 = \frac{88}{17} - \frac{17}{17} = \frac{71}{17}$

$d = \sqrt{\left(-\frac{22}{17} - 2\right)^2 + \left(\frac{71}{17} - 5\right)^2}$

hw #4

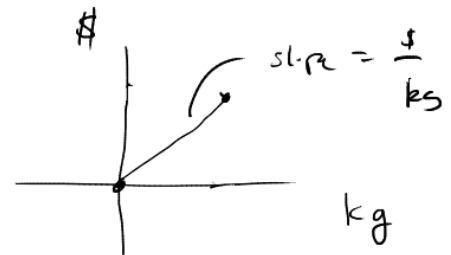
Points

$$\begin{array}{cc} (100, 1470) & , & (140, 2030) \\ \downarrow & & \downarrow \\ (w, C) & & (w, C) \end{array}$$

Cost, C , depends on w .

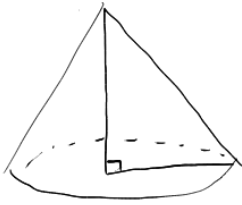
$\Rightarrow$ " $y = mx + b$ " but here $C = y$
 $w = x$

$$C = \underbrace{(m)}_{\text{\$/kg}} w + \underbrace{(b)}$$



Homework: You choose 1 problem from #21 - #43. (2.6 p.74)
work it, be ready to describe solution.

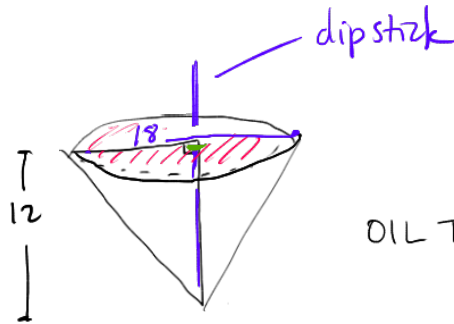
#44



cone

$$V = \frac{1}{3} \pi r^2 h$$

$$\pi r^2 h \rightarrow$$



OIL TANK

when full

$$h=12, r=9.$$

$$V = \frac{1}{3} \pi 9^2 \cdot 12$$

$$= 324\pi$$

half full

$$V_h = 162\pi$$

slice of cone



similar Δ 's

$$\frac{12}{9} = \frac{d}{r}$$

$$\frac{4}{3} = \frac{d}{r} \Rightarrow 4r = 3d$$

$$r = \frac{3}{4} d$$

$$V = 162\pi = \frac{1}{3} \pi r^2 d$$

$$= \frac{1}{3} \pi \left(\frac{3}{4} d \right)^2 d = \frac{1}{3} \pi \frac{9}{16} d^2 \cdot d = \pi \frac{3}{16} d^3$$

divide by π

$$\frac{16}{3} \cdot 162 = \frac{3}{16} d^3 \Rightarrow \frac{16}{3} \cdot 162 = d^3 \Rightarrow d = \sqrt[3]{\frac{16 \cdot 162}{3}} = 9.52$$



6.2 Factoring = opposite of multiplication $\Rightarrow$ subtract

$$6a^5x^2 - 9a^3x^3 + 3a^3x^2 = \underbrace{3a^3x^2}_{\text{common factor}} (2a^2 - 3x + 1)$$

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