$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ for R_1

Left off @ §1.3 #6.

$\boxed{LCD = RR_1R_2R_3}$

$$\frac{1}{R}\cdot\frac{R_1R_2R_3}{R_1R_2R_3} = \frac{1}{R_1}\cdot\frac{RR_2R_3}{RR_2R_3} + \frac{1}{R_2}\cdot\frac{RR_1R_3}{RR_1R_3} + \frac{1}{R_3}\cdot\frac{RR_1R_2}{RR_1R_2}$$

$$\frac{R_1R_2R_3}{LCD} = \frac{RR_2R_3 + RR_1R_3 + RR_2R_1}{LCD}$$

$\frac{A}{B} = \frac{C}{B} \Rightarrow A = C$

$$R_1R_2R_3 = RR_2R_3 + RR_1R_3 + RR_1R_2$$

$$R_1R_2R_3 - RR_1R_3 - RR_1R_2 = RR_2R_3$$

$$R_1(R_2R_3 - RR_3 - RR_2) = RR_2R_3$$

$$\boxed{R_1 = \frac{RR_2R_3}{R_2R_3 - RR_3 - RR_2}}$$

(47) 10-lap race. Bobby's done 2 laps @ $90 \frac{mi}{hr}$. Ricky starts. How fast does Ricky have to go to catch Ricky at the end?

$\boxed{\text{Let } r = \text{Ricky's rate}}$ $\left(\frac{mi}{hr}\right)$

	D	r	t
Bobby	8	90	t
Ricky	10	r	t

112.5
$8\overline{)900.0}$

$t = t$!

$\frac{90}{8} = \frac{r}{10}$ makes sense.

Let's see.

$r = \frac{900}{8} = 112.5 \frac{mi}{hr}$ is correct.

§1.3 #25 Find distance & midpoint for

$(x_1, y_1) = (-1, 1)$, $(x_2, y_2) = (-1 + 4\sqrt{3}, 4)$

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(-1 + 4\sqrt{3} - (-1))^2 + (4 - 1)^2}$$

$$= \sqrt{(-1 + 4\sqrt{3} + 1)^2 + 3^2}$$

$$= \sqrt{(4\sqrt{3})^2 + 3^2}$$

$$= \sqrt{48 + 9} = \sqrt{57}$$

$(4\sqrt{3})^2 = 4^2 (\sqrt{3})^2$

$= 16(3)$

$= 48$

$(xy)^2 = x^2 y^2$

$(x+y)^2 = x^2 + 2xy + y^2$

is different.

ON TESTS, AVOID CALCULATOR, UNLESS ASKED-FOR.

S 1.3 #31 $(\pi, 0), (\frac{\pi}{2}, 1)$

$$D = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

$$= \sqrt{(1-0)^2 + \left(\frac{\pi}{2}-\pi\right)^2}$$

$$= \sqrt{1^2 + \left(-\frac{\pi}{2}\right)^2}$$

$$= \sqrt{1 + \frac{\pi^2}{4}} = \sqrt{\frac{\pi^2+4}{4}}$$

$$= \frac{\sqrt{\pi^2+4}}{\sqrt{4}}$$

$$= \frac{\sqrt{\pi^2+4}}{2}$$

$$\left(-\frac{\pi}{2}\right)^2 =$$

$$\left(-\frac{\pi}{2}\right)\left(-\frac{\pi}{2}\right)$$

$$= \frac{\pi^2}{4}$$

$$\frac{\pi^2}{4} + \frac{1}{1}\cdot\frac{4}{4}$$

$$= \frac{\pi^2+4}{4}$$

Squaring Both Sides casts a net.

Sometimes we throw little fishies back

$A = B \Longrightarrow A^2 = B^2$, BUT

$A^2 = B^2 \not\Longrightarrow A = B$

$\sqrt{x+1} = x-5$

$$\boxed{\left(\sqrt{x+1}\right)^2} = (x-5)^2$$

$x+1 = x^2-10x+25$

$x^2-10x+25 = x+1$

$x^2-11x+24=0$

$(x-8)(x-3)=0$

$\sqrt{3+1} = \sqrt{4} = 2$, but $3-5=-2$!

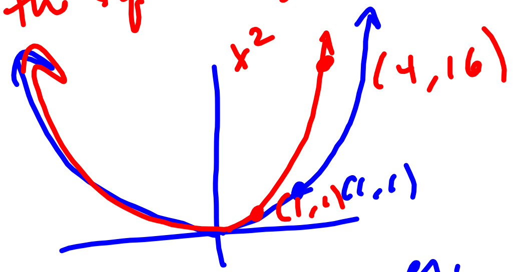
So $\sqrt{3+1} \neq 3-5 \Longrightarrow x \in \{\cancel{3}, 8\}$

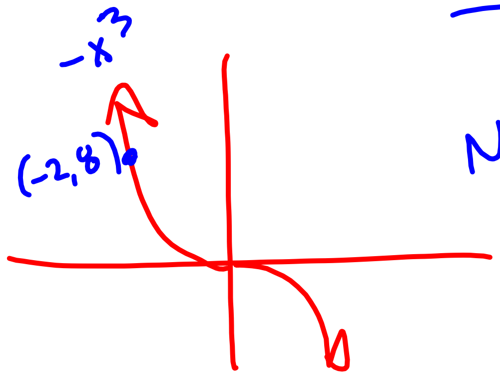
x=3 is little fishy.

x=3 is extraneous sol'n generated by the squaring step.

NOTE:

$(-3)^2 = 3^2 = 9$, but $-3 \neq 3$





No graph paper.
No paper with lines.

49. *Average Speed* Junior drove his rig on Interstate 10 from San Antonio to El Paso. At the halfway point he noticed that he had been averaging 80 mph, while his company requires his average speed to be 60 mph. What must be his speed for the last half of the trip so that he will average 60 mph for the entire trip?
HINT The distance from San Antonio to El Paso is irrelevant. Use D or simply make up a distance.

$\left(\frac{3}{2}\right)^2 = \frac{3^2}{2^2} = 9/4$

55

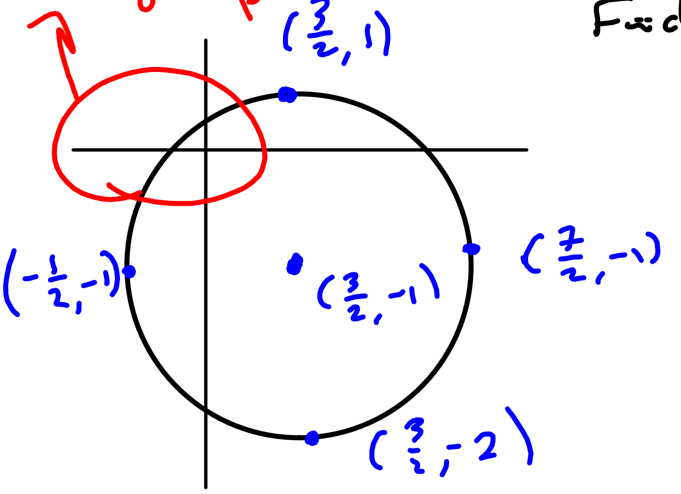
$x^2 - 3x + \left(\frac{3}{2}\right)^2 + y^2 + 2y + 1^2 = \frac{3}{4} + \frac{9}{4} + 1 \quad -\frac{4}{4}$

$\left(x - \frac{3}{2}\right)^2 + (y+1)^2 = \frac{16}{4} = 4$

$(h, k) = \left(\frac{3}{2}, -1\right)$

$r = 2$

A little sketch on this part



Find y-int:

$\left(0 - \frac{3}{2}\right)^2 + (y+1)^2 = 4$

$\frac{9}{4} + (y+1)^2 = 4$

$(y+1)^2 = \frac{7}{4}$

$y + 1 = \pm\sqrt{\frac{7}{4}}$

$y = 1 \pm \sqrt{\frac{7}{4}}$