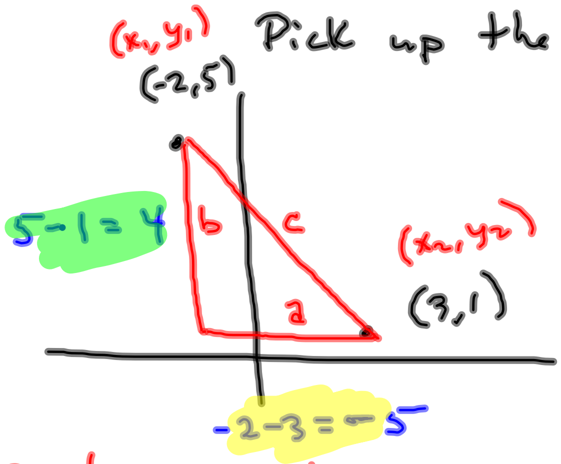
Pick up the 7.3 spare.



Distance Formula

want c

Pythagorus says

$a^2+b^2=c^2$

$(-5)^2+4^2=c^2$

$c^2=25+16$

$c^2=41$ $\qquad \sqrt{c^2}=\sqrt{41}$

$|c|=\sqrt{41} \longrightarrow c=\pm\sqrt{41}$

$c=\sqrt{41}$ because distance is positive.

$c=\sqrt{41} \approx 6.403124237$

≈ 6.403

Distance = d

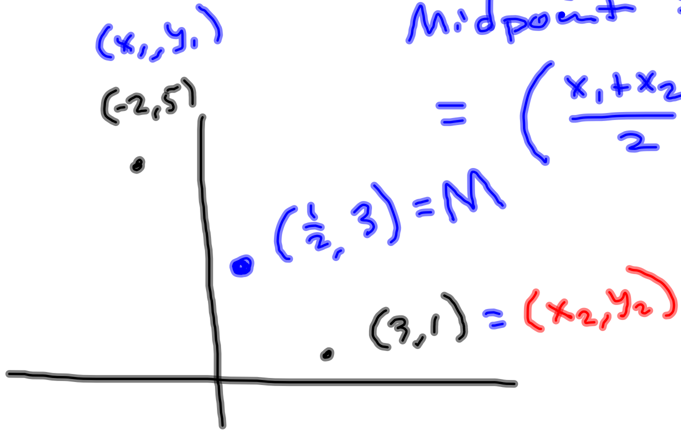
$= \sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$

$= \sqrt{(-2-3)^2+(5-1)^2}$

$= \sqrt{(-5)^2+(4)^2}$

$= \sqrt{25+16}$

$= \sqrt{41}$



Midpoint $= M$

$$= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$= \left(\frac{-2+3}{2}, \frac{5+1}{2}\right)$$

$$= \left(\frac{1}{2}, \frac{6}{2}\right) = \left(\frac{1}{2}, 3\right)$$

#41 §7.4

$$\sqrt[3]{\frac{16}{27}} - \frac{\sqrt[3]{54}}{6}$$

$2\,|\,16$
$2\,|\,8$
$2\,|\,4$
2

$2\,|\,54$
$3\,|\,27$
$3\,|\,9$
3

$$\frac{\sqrt[3]{16}}{\sqrt[3]{27}} - \frac{\sqrt[3]{54}}{6} = \frac{2\sqrt[3]{2}}{3} - \frac{3\sqrt[3]{2}}{6}$$

LCD $= 2 \cdot 3$

$$= \left(\frac{2\sqrt[3]{2}}{3}\right)\left(\frac{2}{2}\right) - \frac{3\sqrt[3]{2}}{6} = \frac{4\sqrt[3]{2} - 3\sqrt[3]{2}}{6} = \frac{\sqrt[3]{2}}{6}$$

$$\frac{4\heartsuit - 3\heartsuit}{6} = \frac{1\heartsuit}{6}$$

#61 §7.4

$$(2\sqrt{7} + 3\sqrt{5})(\sqrt{7} - 2\sqrt{5})$$

$$2\sqrt{7}\sqrt{7} - (2\sqrt{7})(2\sqrt{5}) + 3\sqrt{5}\sqrt{7} - (3\sqrt{5})(2\sqrt{5})$$

$$2 \cdot 7 - 4\sqrt{35} + 3\sqrt{35} - 6 \cdot 5$$

$$= \boxed{-16 - \sqrt{35}}$$

$$2\sqrt{7}\sqrt{7} = 2\sqrt{49} = 2 \cdot 7 = 14$$

$$3 \cdot 2 \cdot \sqrt{5}\sqrt{5} = 6\sqrt{25} = 6 \cdot 5 = 30$$

Rationalizing Denominators

$2.236 \approx \sqrt{5}$

$\frac{2}{\sqrt{5}}$

$$\begin{array}{r} .8944 \\ 2.236\overline{)2.00000} \\ \underline{1.7888} \\ .2112 \\ \underline{.20124} \\ .00996 \\ \underline{.008944} \end{array}$$

Really Hard

$$\begin{array}{r} 2.236 \\ \underline{2} \\ 4.472 \end{array}$$

$$\frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{5}}{5} \approx \frac{4.472}{5}$$

$$\begin{array}{r} .8944 \\ 5\overline{)4.472} \\ -\underline{4.0} \\ .472 \\ \underline{.450} \\ .022 \\ \underline{.020} \\ .002000 \\ \underline{.0020} \\ 0 \end{array}$$

Easier.

$$\frac{7}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$$

$$\frac{2\sqrt{9}}{\sqrt{16y}} = \frac{2\cdot 3}{4\sqrt{y}} = \frac{3}{2\sqrt{y}} \cdot \frac{\sqrt{y}}{\sqrt{y}} = \frac{3\sqrt{y}}{2y}$$

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

Conjugate:

$3 + \sqrt{2}$, $3 - \sqrt{2}$

$$(3+\sqrt{2})(3-\sqrt{2}) = 3^2 - (\sqrt{2})^2 = 9 - 2 = 7$$

$$\frac{3}{1+\sqrt{5}} = \left(\frac{3}{1+\sqrt{5}}\right)\left(\frac{1-\sqrt{5}}{1-\sqrt{5}}\right) = \frac{3-3\sqrt{5}}{1^2-\sqrt{5}^2}$$

$$= \frac{3-3\sqrt{5}}{-4} = \frac{3\sqrt{5}-3}{4}$$

Rationalizing Numerators

$$\frac{3-\sqrt{2}}{2} = \left(\frac{3-\sqrt{2}}{2}\right)\left(\frac{3+\sqrt{2}}{3+\sqrt{2}}\right) = \frac{9-2}{6+2\sqrt{2}} = \frac{7}{6+2\sqrt{2}}$$

$$\left(\frac{\sqrt{x+2}-\sqrt{x}}{2}\right)\left(\frac{\sqrt{x+2}+\sqrt{x}}{\sqrt{x+2}+\sqrt{x}}\right)$$

$$= \frac{(\sqrt{x+2})^2-(\sqrt{x})^2}{2(\sqrt{x+2}+\sqrt{x})} = \frac{x+2-x}{2(\sqrt{x+2}+\sqrt{x})}$$

$$= \frac{\cancel{2}^{1}}{\cancel{2}_{1}(\sqrt{x+2}+\sqrt{x})} = \frac{1}{\sqrt{x+2}+\sqrt{x}}$$

§7.5 #s 1–69 every 4th, PLUS 1:

Rationalize the numerator:

$$\frac{\sqrt{x+h}-\sqrt{x}}{h}$$

Due Tuesday