

Instructions: Complete the following problems. You may work alone or in a group. Do not just copy answers from a group member, but be sure that you understand the problem. Similar questions will appear on exams. You may be asked to explain or present the answers to the class. This assignment is due at the end of the class period.

1. Simplify.

a. $\frac{4(-9)-3^2}{25+4(-6-1)} = \frac{4(-9)-9}{25+4(-7)} = \frac{-36-9}{25-28} = \frac{-45}{-3} = 15$

b. $\left(\frac{4}{3}\right)^2 - \left(\frac{1}{2}\right)^2 \cdot \left(\frac{8}{3}\right) + 2 \div 3 = \frac{16}{9} - \frac{1}{4} \cdot \frac{8}{3} + \frac{2}{3} = \frac{16}{9} - \frac{2}{3} + \frac{2}{3} = \frac{16}{9}$

c. $\frac{5^2-3^2}{|4-4^2|} = \frac{25-9}{|4-16|} = \frac{16}{|-12|} = \frac{16}{12} = \frac{4 \cdot 4}{4 \cdot 3} = \frac{4}{3}$

d. $\left(\frac{2-(-4)^3}{5^2-7 \cdot 2}\right)^2 = \left(\frac{2-(-64)}{25-14}\right)^2 = \left(\frac{66}{11}\right)^2 = 6^2 = 36$

2. Solve the equation for the variable. State whether the equation is conditional, an identity or a contradiction. Clearly state the solution for the variable, if one exists.

a. $\left(\frac{3x+2}{4} - \frac{x}{12} = \frac{x}{3} - 1\right) 12 \Rightarrow 12\left(\frac{3x+2}{4}\right) - 12\left(\frac{x}{12}\right) = 12\left(\frac{x}{3}\right) - 12(1) \Rightarrow$

$3(3x+2) - x = 4x - 12 \Rightarrow 9x + 6 - x = 4x - 12 \Rightarrow 8x + 6 = 4x - 12$
 $\Rightarrow 4x + 6 = -12 \Rightarrow 4x = -18 \Rightarrow x = -\frac{9}{2}$ Conditional

b. $-3x + 2 + 5x = 2(x + 1)$

$2x + 2 = 2x + 2 \Rightarrow$ identity \rightarrow all reals

c. $\left(\frac{4(2n+1)}{3} = 2n - 6\right) 3 \Rightarrow 3\left(\frac{4(2n+1)}{3}\right) = 3(2n-6) \Rightarrow 8n + 4 = 6n - 18$

$\Rightarrow 2n + 4 = -18 \Rightarrow 2n = -22 \Rightarrow n = -11$ Conditional

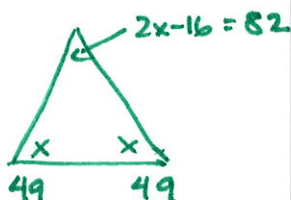
d. $\left(\frac{2y-7}{4} = \frac{3y-13}{6}\right) 12 \Rightarrow 3(2y-7) = 2(3y-13) \Rightarrow$

$6y - 21 = 6y - 26$

Contradiction

no solution

3. Suppose that an isosceles triangle has two angles equal to each other, and a third angle is 16 degrees less than twice the measure of one of the other two. What are the three angles?



$x + x + 2x - 16 = 180$

$4x - 16 = 180$

$\frac{4x = 196}{4} \Rightarrow x = 49$

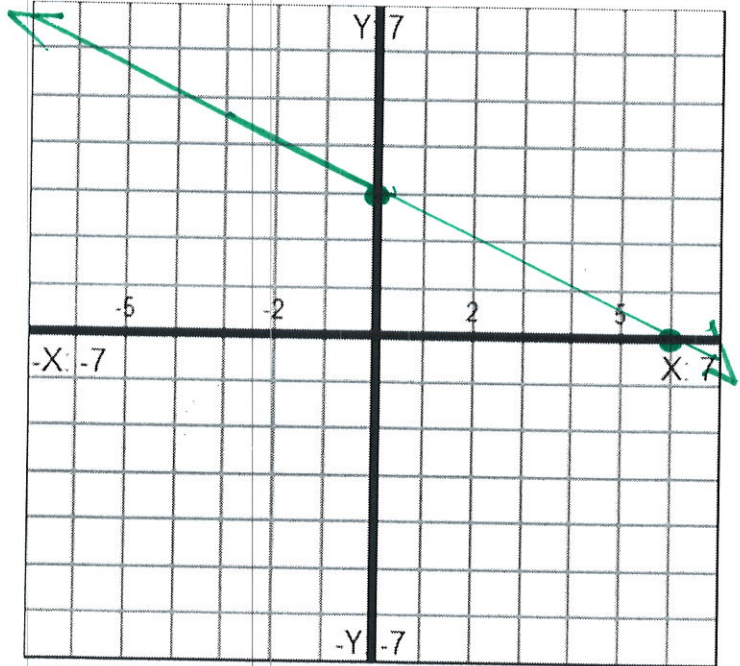
4. Graph the equation $3x + 6y = 18$ using the intercepts.

$$x=0 \quad \frac{6y}{6} = \frac{18}{6} \Rightarrow y=3$$

$(0,3)$ y-int

$$y=0 \quad \frac{3x}{3} = \frac{18}{3} \Rightarrow x=6$$

$(6,0)$ x-int



5. What is the equation of the line that is horizontal and passes through the point $(1,4)$?

$$y=4$$

6. What is the equation of the line passing through the points $(-4,-1)$ and $(2,3)$?

$$m = \frac{3 - (-1)}{2 - (-4)} = \frac{4}{6} = \frac{2}{3}$$

$$y = \frac{2}{3}x + \frac{5}{3}$$

$$y = \frac{2}{3}x + b$$

$$3 = \frac{2}{3}(2) + b$$

$$3 = \frac{4}{3} + b$$

$$-\frac{4}{3} - \frac{4}{3}$$

$$\frac{9}{3} - \frac{4}{3} = \frac{5}{3} = b$$

7. Put the equation $4x + 3y = -6$ into slope-intercept form.

$$\frac{3y}{3} = -\frac{4x}{3} - \frac{6}{3}$$

$$y = -\frac{4}{3}x - 2$$