

Thu 11-15-18

Review Problems for test.

① Solve.
 $x^2 + 4x - 21 = 0$
 $(x + 7)(x - 3) = 0$
 $x = -7 \text{ or } x = 3$

② Solve.
 $x^2 + 3x - 2 = 0$
 $a = 1 \quad b = 3 \quad c = -2$
 $x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-2)}}{2(1)} = \frac{-3 \pm \sqrt{9 + 8}}{2} = \frac{-3 \pm \sqrt{17}}{2}$

③ Discriminant? 17
 $b^2 - 4ac$ from #2
 $3^2 - 4(1)(-2) = 9 + 8 = 17$

④ How many Real Solutions in prob #3.
 Because 17 is positive then we will have 2 Real solutions

⑤ Definitions
 $i^2 = -1$
 $\sqrt{-1} = i$

⑥ Find the conjugate and the product
 $(2 + 3i)(2 - 3i) = 4 - 9i^2 = 4 - 9(-1) = 4 + 9 = 13$

⑦ Simplify.
 $\frac{4}{7i} \cdot \frac{i}{i} = \frac{4i}{7i^2} = \frac{4i}{7(-1)} = \frac{4i}{-7}$

⑧ $\frac{5}{5-4i} \rightarrow \frac{5}{5-4i} \cdot \frac{5+4i}{5+4i} = \frac{25+20i}{25-16i^2} = \frac{25+20i}{25-16(-1)} = \frac{25+20i}{41}$

⑨ Simplify
 $\sqrt{-25} = \sqrt{25} \cdot \sqrt{-1} = 5i$

⑩ $\sqrt{-0.0009} = \sqrt{0.0009} \cdot \sqrt{-1} = 0.03i$

⑪ $(3 + \sqrt{5}i)(3 - \sqrt{5}i) = 9 - 5i^2 = 9 - 5(-1) = 9 + 5 = 14$

⑫ 38% of 150 is what number?
 $\frac{15}{\text{of}} = \frac{\%}{100} \rightarrow \frac{x}{150} = \frac{38}{100} \rightarrow 38(150) = 100x$
 $5700 = 100x$
 $57 = x$

12) 125% of what number is 60?

$$\frac{IS}{OF} = \frac{\%}{100} \rightarrow \frac{60}{x} = \frac{125}{100} \rightarrow 60(100) = 125x$$
$$\boxed{x = 48}$$

13) 36 is what percent of 80?

$$\frac{IS}{OF} = \frac{\%}{100} \rightarrow \frac{36}{80} = \frac{\%}{100}$$
$$36(100) = 80x$$
$$\boxed{x = 45\%}$$

14) IS an A possible? If I replace the lowest test grade with a 100

Test Grades

70, 85, 89, 100, 78

$$\frac{100 + 85 + 89 + 100 + 78}{5} = 90.4 \quad \boxed{\text{yes}}$$

15)

tree $\left[\begin{array}{l} \text{feet} \\ 8' \end{array} \right]$ person $\left[\begin{array}{l} \text{feet} \\ 6' \end{array} \right]$ person $\left[\begin{array}{l} \text{feet} \\ 6' \end{array} \right]$ inches $\left[\begin{array}{l} \text{feet} \\ 8' \end{array} \right]$ inches $\left[\begin{array}{l} \text{feet} \\ 8' \end{array} \right]$

$$\frac{8' \cdot 12}{8''} \rightarrow \frac{x}{6} = \frac{96}{8} \rightarrow \boxed{x = 72'}$$

16)

$$\frac{5x+2}{10x-2} = \frac{2}{3} \rightarrow 3(5x+2) = 2(10x-2)$$

$$15x+6 = 20x-4$$

$$6+4 = 20x-15x$$

$$10 = 5x$$

$$\boxed{2 = x}$$

17) $6x+10 = 3(2x-4)$

$$6x+10 = 6x-12$$

$$6x-6x = -10-12$$

$$0 \neq -22$$

$\boxed{\text{no solution}}$

$$(18) 2x + 10 = 5x + 16 - 3(x + 2)$$

$$2x + 10 = 5x + 16 - 3x - 6$$

$$10 + 6 - 16 = 5x - 2x - 3x$$

$$0 = 0$$

all solutions

$$(19) \frac{x}{x-4} - \frac{4}{x-4} = 3$$

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

$$1 \neq 3 \quad \text{no solution}$$

$$(20) \frac{2x+2}{3} + \frac{x-1}{2} = x+1$$

$$\frac{2x+2}{3} + \frac{x-1}{2} = \frac{x+1}{1} \quad \text{LCM}=6$$

$$\frac{2(2x+2)}{6} + \frac{3(x-1)}{6} = \frac{6(x+1)}{6}$$

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

$$\frac{7x+1}{6} = \frac{6x+6}{6} \rightarrow 6(7x+1) = 6(6x+6)$$

$$42x+6 = 36x+36$$

$$42x-36x = 36-6 \rightarrow 6x = 30$$

$$x = 5$$