

Name: _____

Show All Work Neatly To Receive Credit

1) Given the standard form quadratic equation $y = x^2 - 2x - 15$.

a. Write the equation in factored form.

$$\begin{array}{r|l} -2 & -15 \\ 5 & 13 \\ \hline & -5 \cdot 3 \end{array}$$

$$y = (x - 5)(x + 3)$$

b. What are the x-intercepts of the graph of this function?

$$x = 5 \quad x = -3$$

c. Write the equation in vertex form.

$$y = x^2 - 2x - 15$$

$$-\frac{2}{2} = -1 \quad (-1)^2 = 1$$

$$y = (x - 1)^2 - 16$$

a. $y = (x - 5)(x + 3)$

b. $x = 5 \quad x = -3$

c. $y = (x - 1)^2 - 16$

d. $(1, -16)$

d. What is the vertex of the graph of this function?

$$(1, -16)$$

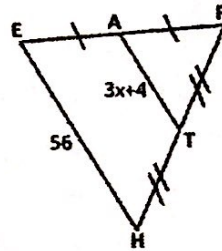
2) Find the value of x in the figure given to the right.

$$2(3x + 4) = 56$$

$$3x + 4 = 28$$

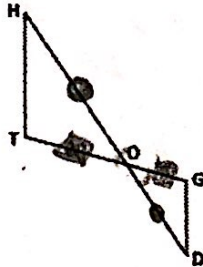
$$3x = 24$$

$$x = 8$$



$x = 8$

3) Given: $\frac{HO}{DO} = \frac{TO}{GO}$
 Prove: $\angle THO \cong \angle GDO$



Given

 $\frac{HO}{DO} = \frac{TO}{GO}$

Vertical

 $\angle HOT \cong \angle GOD$

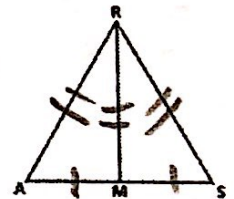
SAS

$\triangle HOT \cong \triangle GOD$

Def. of Similarity

$\angle THO \cong \angle GDO$

4) Given: \overline{RM} bisects \overline{AS}
 $\overline{RA} \cong \overline{RS}$
 Prove: $\triangle RAM \cong \triangle RSM$



Given

 \overline{RM} bisects \overline{AS}

Given

 $\overline{RA} \cong \overline{RS}$

Reflexive Prop.

 $\overline{RM} \cong \overline{RM}$

def of bisects

$\overline{AM} \cong \overline{MS}$

SSS

$\triangle RAM \cong \triangle RSM$

20-11-9

5) Michelle is playing a fantasy board game that requires her to roll a 20-sided die two times in order to defeat a dragon. If the die lands on 20 on the first roll and a number greater than 11 on the second roll, Michelle will conquer her foe! What is the probability that Michelle will NOT defeat the dragon?

0.9775

Will defeat: $\frac{1}{20} \cdot \frac{9}{20} = 0.0225$

Will not defeat = $1 - 0.0225 =$

6) The estimated probabilities for each of the NFL playoff teams to win this year's super bowl are as follows.

Patriots	Cowboys	Chiefs	Falcons	Raiders	Steelers	Giants	Seahawks	Packers	Texans	Dolphins	Lions
AFC	NFC	AFC	NFC	AFC	AFC	NFC	NFC	NFC	AFC	AFC	NFC
29%	27%	16%	10%	5%	4%	3%	2%	2%	1%	0.5%	0.5%

What is the probability that the winning team is either from the AFC or that their name starts with the letter C? Express your answer as a percentage.

$P(AFC \cup C) = P(AFC) + P(C) - P(AFC \cap C)$

58.33%

$\frac{6}{12} + \frac{2}{12} - \frac{1}{12} = \frac{7}{12} = 0.5833$

7) Solve the radical equation for x:

$(3x)^2 = (\sqrt{2x+32})^2$
 $9x^2 = 2x + 32$
 $9x^2 - 2x - 32 = 0$

$3x - \sqrt{2x+32} = 0$
 $-2 \sqrt{2x+32}$
 $9x^2 - 18x + 16x - 32 = 0$
 $9x^2 - 18x - 16x - 32 = 0$
 $9x^2 - 34x - 32 = 0$
 $(9x - 16)(x - 2) = 0$
 $x = 2$
 $x = 16/9x$

8) Solve the rational equation for x:

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

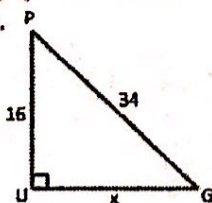
$12 = (x-1)(x+3)$

$2 \overline{) 15}$
 $5 \overline{) 15} - 3$
 $x = 3$

x = -5

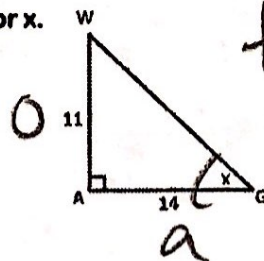
x = 3

9) Solve for x.



x = 30

10) Solve for x.



$\tan(x) = \frac{11}{14}$

$x = \tan^{-1}(\frac{11}{14})$

x = 38.16

x = 38.16

$34^2 = 16^2 + x^2$
 $\sqrt{34^2 - 16^2} = x$

* DEGREE MODE