

Adv. Functions - Practice Questions set #2 Name: key

Practice Question # 1

- The first term in a geometric sequence is two and the common ratio is four. What term is 131,072 in this sequence?

$$a_n = a_1 (r)^{n-1}$$

$$\frac{131072}{2} = \frac{2(4)^{n-1}}{2}$$

$$65536 = 4^{n-1}$$

$$\frac{(\pm \log 65536)}{\log 4} = \frac{(n-1) \log 4}{\log 4} + 1$$

$$n = 9 \rightarrow \boxed{9^{\text{th}} \text{ term}}$$

Practice Question # 2

- Amanda is selecting 3 marbles from a bag at random. In the bag there are 4 blue marbles, 3 yellow marbles, and 5 red marbles. What is the probability that Amanda will select 2 yellow marbles and 1 red marble?

$$\frac{{}^3C_2 \cdot {}^5C_1}{{}^{12}C_3} = \frac{3 \cdot 5}{220}$$

$$= \frac{8}{220} = \boxed{3.6\%}$$

Practice Question # 3

- A new card game at a casino allows you to draw one card from a standard deck of cards. If you pick a heart, you will win \$10. If you pick a face card, which is not a heart, you win \$8. If you pick any other card, you lose \$6. Does the game benefit the "house" or the player?

outcomes	+10	+8	-6
probability	$\frac{13}{52}$	$\frac{9}{52}$	$\frac{30}{52}$

$$\Rightarrow 10\left(\frac{13}{52}\right) + 8\left(\frac{9}{52}\right) - 6\left(\frac{30}{52}\right)$$

$$= +\$0.42 \rightarrow \boxed{\text{player benefits}}$$

+42 every time you play game

Practice Question # 4

- What are the domain and range of the following functions? (in int. not)

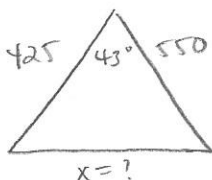
a.) $f(x) = -|x+2|+4$ D: $(-\infty, \infty)$ R: $(-\infty, 4]$

b.) $f(x) = \sqrt{x-3}+1$ D: $[3, \infty)$ R: $[1, \infty)$

c.) $f(x) = \ln(x+4)-3$ D: $(-4, \infty)$ R: $(-\infty, \infty)$

Practice Question # 5

- Verne is constructing a triangular pen with wood fencing. One side is 425 feet long, another side is 550 feet, and the included angle is 43° . It will cost \$8 per foot to fence the pen. How much will Verne have to spend on his pen?



$$x^2 = 425^2 + 550^2 - 2(425)(550)\cos 43^\circ$$

$$x = 376$$

$$\text{Perimeter} = 425 + 550 + 376$$

$$= 1351 \text{ ft}$$

$$= 1351 \times 8 = \boxed{\$10808}$$

Practice Question # 6

- The point $(-12, -8)$ lies on the terminal side of an angle in standard position. What is the value of this angle? (positive)

