

Precalculus Honors
P.4 day 1 Warmup

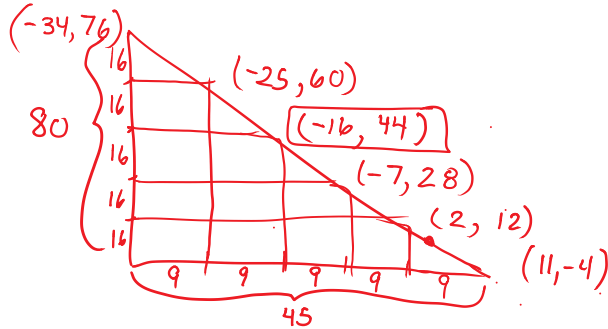
1. Given the equation of the circle $(x+2)^2 + (y+6)^2 = 10$, identify the

$$(x-h)^2 + (y-k)^2 = r^2$$

where (h, k) = center
 r = radius

- a) Center $(-2, -6)$
b) Radius $\sqrt{10}$

2. Find the point that is $3/5$ of the way from $(11, -4)$ to $(-34, 76)$



3. Given the points $X(8,4)$, $Y(6,-1)$, and $Z(-4,-3)$,
a) find the equation of the median to \overline{XZ} .

Midpoint $M = \left(\frac{-4+8}{2}, \frac{-3+4}{2}\right) = \left(2, \frac{1}{2}\right)$
SLOPE $\overline{MY} = \frac{-1 - \frac{1}{2}}{6 - 2} = \frac{-\frac{3}{2}}{4} = -\frac{3}{8}$

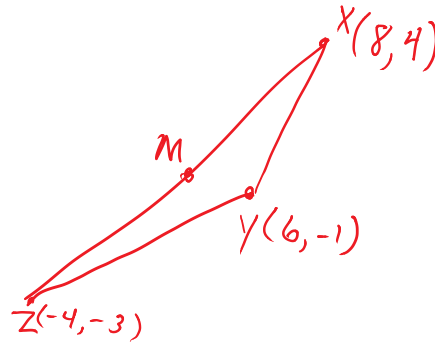
$$y + 1 = -\frac{3}{8}(x - 6)$$

- b) Find the equation of the altitude to \overline{XZ} .

Slope $\overline{XZ} = \frac{4+3}{8+4} = \frac{7}{12}$

Slope ALT. = $-\frac{12}{7}$

$$y + 1 = -\frac{12}{7}(x - 6)$$



4. In 1960 the average weight of an American male was 167 lbs. In 2002, it was 191 lbs.

Year	WT
60	167
102	191

- a. Write a linear equation that expresses weight (in lbs) in terms of time (in years since 1900).

Slope = $\frac{191-167}{102-60} = \frac{24}{42} = \frac{4}{7}$

$$y - 167 = \frac{4}{7}(x - 60)$$

- b. What is the slope of this line and what does it mean in the real world?

$m = \frac{4}{7}$ lbs/year = average weight of US males increased by $\frac{4}{7}$ lbs/year

- c. What is the y-intercept and what does it mean in the real world?

$y = \frac{4}{7}x - \frac{240}{7} + 167 \Rightarrow y = \frac{4}{7}x + \frac{929}{7}$
 $\frac{929}{7} = 132.71$ lbs average US male weight in 1900

- d. When does this model predict the average weight for an American male will reach 200 lbs?

$$200 = \frac{4}{7}x + \frac{929}{7}$$

$$1400 = 4x + 929$$

$$4x = 471$$

$$x = 117.75$$

late in 2017 (≈ sept)