

# Linear Graphing Practice

Math 130 *Kovitz*

1. Let  $L$  be the straight line through the points  $(2, 4)$  and  $(8, 64)$ . Find an equation and both intercepts and sketch the line. Label the two points given and the points found.
2. Let  $L$  be the straight line through the points  $(6, -5)$  and  $(27, 2)$ . Find an equation and both intercepts and sketch the line. Label the two points given and the points found.
3. Let  $L$  be the straight line through the points  $(\sqrt{2}, 2\sqrt{3})$  and  $(\sqrt{3}, 3\sqrt{2})$ . Find an equation and both intercepts and sketch the line. Label the two points given and the points found.
4. Let  $L$  be the straight line through the points  $(8, 5)$  and  $(20, 10)$ .
  - (a) Find an equation and both intercepts and sketch the line. Label the two points given and the points found.
  - (b) Find an equation of the straight line passing through the point  $(5, 3)$  and perpendicular to line  $L$ .
  - (c) Find the exact coordinates of the point on line  $L$  that is closest to the origin.
5. Let  $K$  be the line defined by the equation

$$y = 0.225x + 1.8.$$

- (a) Find and plot with exact coordinates: the  $x$  and  $y$ -intercepts, the point where  $x = 18$  and the point where  $y = 18$ .
- (b) Find the exact coordinates of the midpoint of the portion of the graph that lies in the second coordinate and plot that midpoint. How far is it from the origin?
- (c) Find the distance from the origin of the point on the graph that is closest to the origin. Find the exact coordinates of that point.

## Answers follow.

# ANSWERS

1. The equation is  $y = 10x - 16$ . The intercepts are  $(1.6, 0)$  and  $(0, -16)$ .
2. The equation is  $y = (1/3)x - 7$ . The intercepts are  $(21, 0)$  and  $(0, -7)$ .
3. The equation is  $y = \sqrt{6}x$ . The intercept is  $(0, 0)$ .
4. (a) The equation is  $y = (5/12)x + 5/3$ . The intercepts are  $(-4, 0)$  and  $(0, 5/3)$ .  
(b) The equation is  $y = (-12/5)x + 15$ .  
(c) The point on line  $L$  closest to the origin is the point  $(-100/169, 240/169)$ .
5. (a)  $x$ -int:  $(-8, 0)$ ;  $y$ -int:  $(0, 1, 8)$ ;  $(18, 5.85)$ ;  $(72, 18)$ .  
(b)  $(-4, 0.9)$ . It is 4.1 from the origin.  
(c) The distance from the origin is  $\frac{72}{41} \approx 1.756098$ .

The coordinates are  $\left(-\frac{648}{1681}, \frac{2880}{1681}\right) \approx (-.385485, 1.713266)$ .