East Los Angeles College
Department of Mathematics
Math 115
Test 2

Solutions

33 r

Solve for the indicated variable.

1) $d = rt$ for r

$\frac{d}{t} = \frac{rt}{t}$

$\frac{d}{t} = r$; $\boxed{r = \frac{d}{t}}$ ✓

2) $C = 2\pi r$ for r

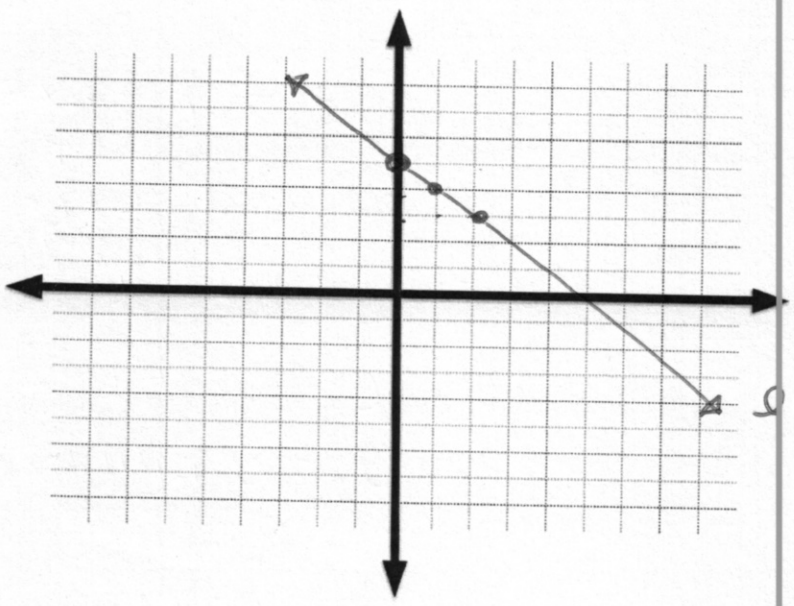
$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$

$\frac{C}{2\pi} = r$; $\boxed{r = \frac{C}{2\pi}}$ ✓

Graph the following linear equations

3) $x + y = 5$

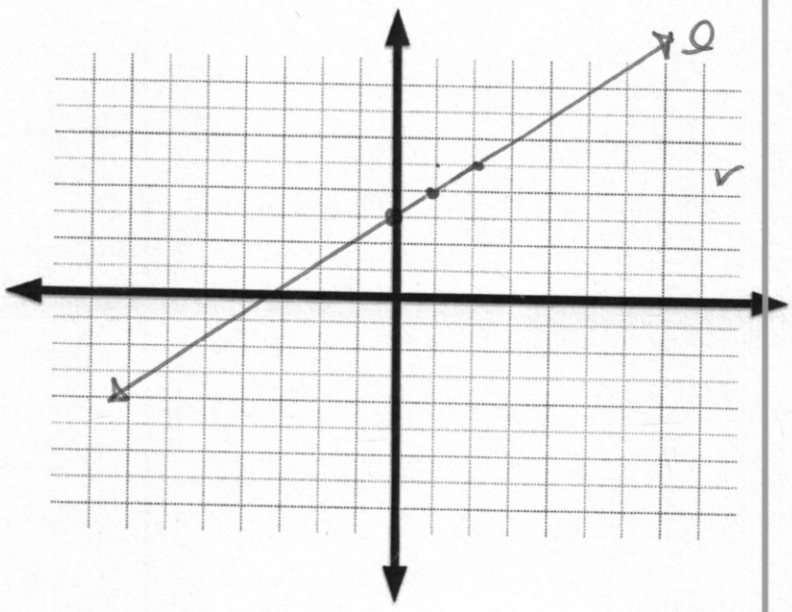
$x + y = 5$
$-x \quad -x$
$y = -x + 5$
$m = \frac{-1}{1}$ ✓ ; $b = 5$ ✓



9, ✓

5r

4) $x - y = -3$



$x - y = -3$
$-x \quad\quad -x$

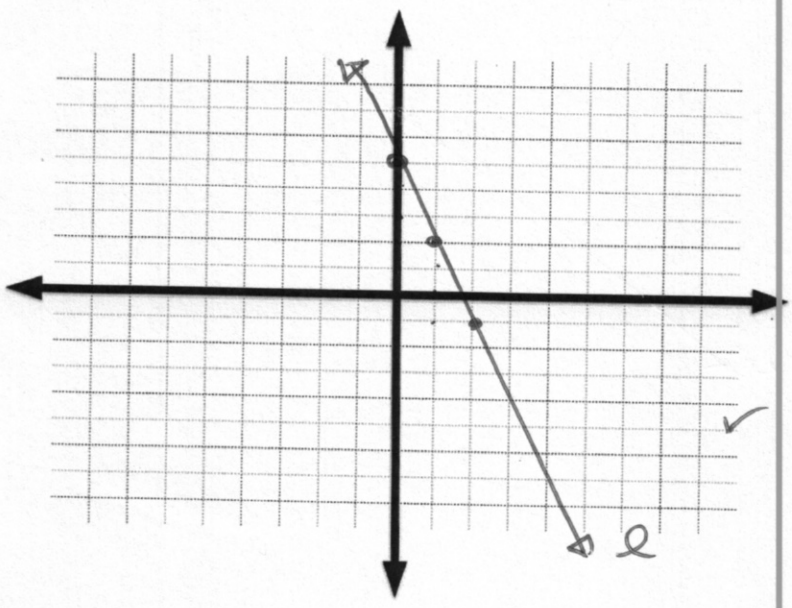
$\frac{-y}{-1} = \frac{-x-3}{-1}$

$y = \frac{-x}{-1} - \frac{3}{-1}$

$y = x + 3$

$m = \frac{1}{1}$; $b = 3$ ✓ ✓

5) $3x + y = 5$



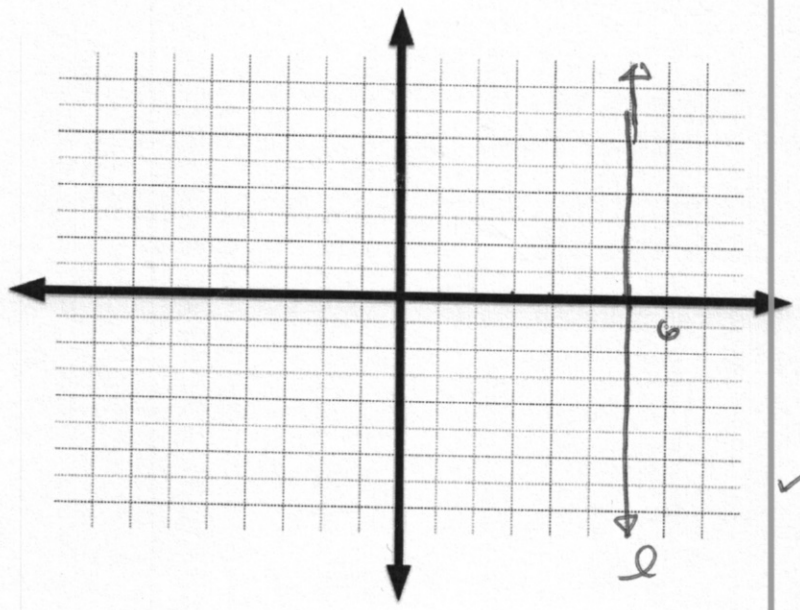
$3x + y = 5$
$-3x \quad\quad -3x$

$y = -3x + 5$

$m = -\frac{3}{1}$; $b = 5$ ✓ ✓

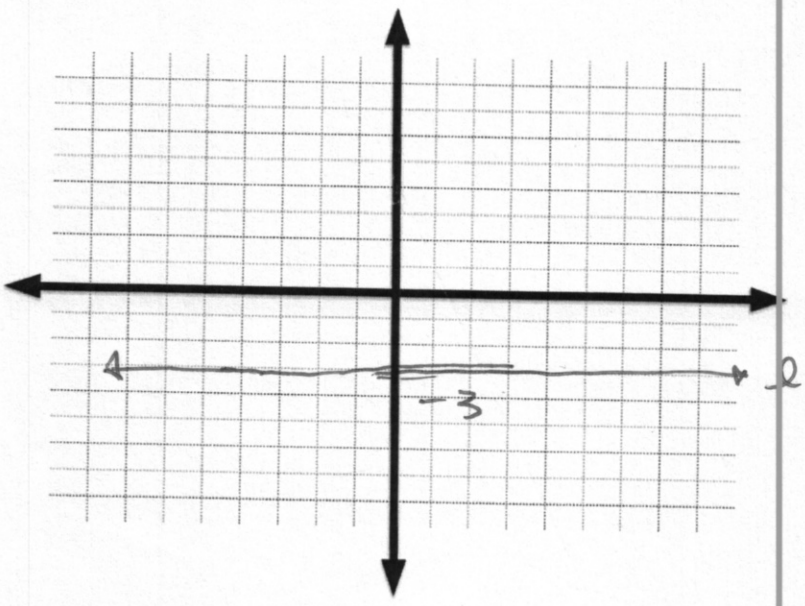
6 ✓

6) $x = 6$



✓

7) $y = -3$



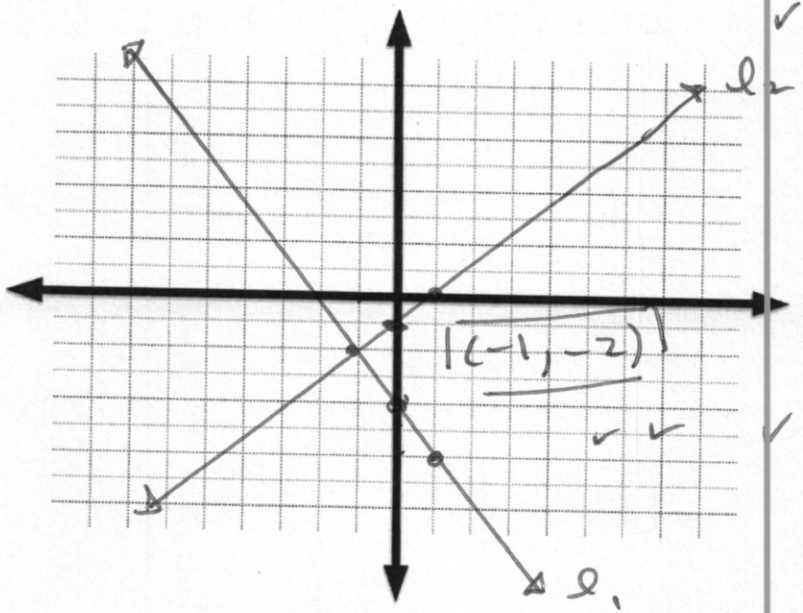
✓

2

8) Solve the linear system by graphing.

ℓ_1 $2x + y = -4$

ℓ_2 $x - y = 1$



(ℓ_1) $2x + y = -4$

$-2x \quad -2x$

$y = -2x - 4$

$m = -\frac{2}{1}$; $b = -4$

(ℓ_2) $x - y = 1$

$-x \quad -x$

$\frac{-y}{-1} = \frac{-x + 1}{-1}$

$y = \frac{-x}{-1} + \frac{1}{-1}$

$y = x - 1$

$m = 1$; $b = -1$

Determine the equation of the line that:

9) Passes through the point $(1, -3)$ with slope of 4

(x, y_1)

$y - y_1 = m(x - x_1)$

$y - (-3) = 4(x - 1)$

$y + 3 = 4x - 4$

$-3 \quad -3$

$y = 4x - 7$

10) Passes through the points $(0, -5)$ and $(2, -1)$

(x, y_1) (x, y_2)

$y - y_1 = m(x - x_1)$

$-5 \quad 2 \quad 0$

$y - (-5) = 2(x - 0)$

$y + 5 = 2x$

$-5 \quad -5$

$y = 2x - 5$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{-1 - (-5)}{2 - 0}$

$m = \frac{-1 + 5}{2}$

$m = \frac{4}{2}$

$m = 2$

11) Passes through the point $(0,6)$ and is parallel to the equation $x + y = -3$

$y - y_1 = m(x - x_1)$

$y - 6 = -1(x - 0)$

$y - 6 = -x$

$+6 \quad +6$

$y = -x + 6$ ✓✓

$l_1 \parallel l_2$ $\quad m_1 = m_2$ $\quad b_1 \neq b_2$

$-x \quad -x$

$y = -1x - 3$

12) Passes through the pint $(1,2)$ and is perpendicular to the equation $x + 3y = -12$

$y - y_1 = m(x - x_1)$

$y - 2 = 3(x - 1)$

$y - 2 = 3x - 3$

$+2 \quad +2$

$y = 3x - 1$ ✓✓

$l_1 \perp l_2$

$m_2 = -\frac{1}{3}$

$m_1 = 3$

$-x \quad -x$

$\frac{3y}{3} = \frac{-x - 12}{3}$

$y = -\frac{1}{3}x - \frac{12}{3}$

$y = -\frac{1}{3}x - 4$

13) Solve by the Graphical Method.

$l_1 \quad 3x + y = 6$

$l_2 \quad x - 2y = 2$

$x - 2y = 2$

$-x \quad -x$

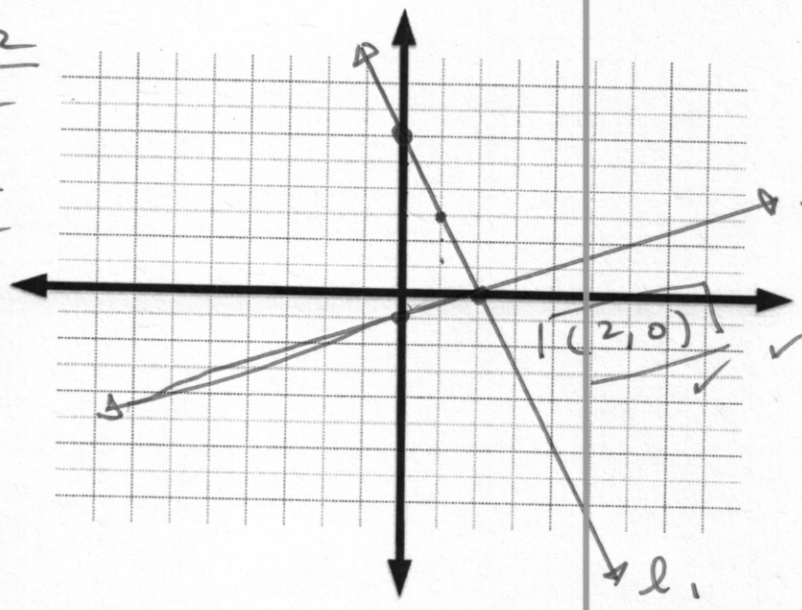
$\frac{-2y}{-2} = \frac{-x + 2}{-2}$

$y = \frac{-x}{-2} + \frac{2}{-2}$

$y = \frac{1}{2}x - 1$

(l_1) $y = -3x + 6$

(l_2) $y = \frac{1}{2}x - 1$ ✓



✓ ✓ ✓ 8✓

14) Solve the system by the Addition Method.

ℓ_1 $2x + y = 7$
ℓ_2 $-x + 3y = -7$

ℓ_1 $2x + y = 7$

ℓ_2 $2(-x+3y) = -7 \cdot 2$

$2x + y = 7$
$-2x + 6y = -14$
$+ \quad\quad + \; -$

$7y = -7$

$\frac{7y}{7} = \frac{-7}{7}$

$y = -1$

use back sub

$2x + y = 7$
$\quad -1$
$2x - 1 = 7$
$\quad +1 \quad +1$
$2x = 8$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

$(4, -1)$

15) Solve by the Substitution Method

ℓ_1 $x + 3y = 4$
ℓ_2 $2x - 5y = 8$

$x + 3y = 4$
$\quad -3y \quad -3y$

ℓ_1 $x = -3y + 4$

Sub into ℓ_2

$2x - 5y = 8$

Φ

$-3y + 4$

$2(-3y + 4) - 5y = 8$

$-6y + 8 - 5y = 8$

$-11y + 8 = 8$
$\quad -8 \quad -8$

$-11y = 0$

$\frac{-11y}{-11} = \frac{0}{-11}$

$y = 0$

use back sub

$x = -3y + 4$
$\quad\; \Phi$
$\quad\; 0$

$x = -3 \cdot 0 + 4$

$x = 0 + 4$

$x = 4$

$(4, 0)$