

SAMPLE
MATHEMATICS PLACEMENT EXAM

1. Factor the following expression: $25n^2 + 60n + 36$.

- (a) $(5n + 6)(5n - 6)$ (b) $(5n + 6)^2$ (c) $(5n - 36)(5n + 1)$ (d) $(5n - 6)^2$

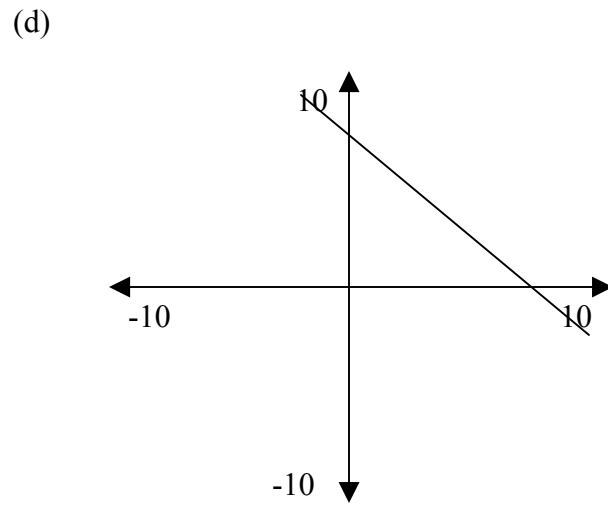
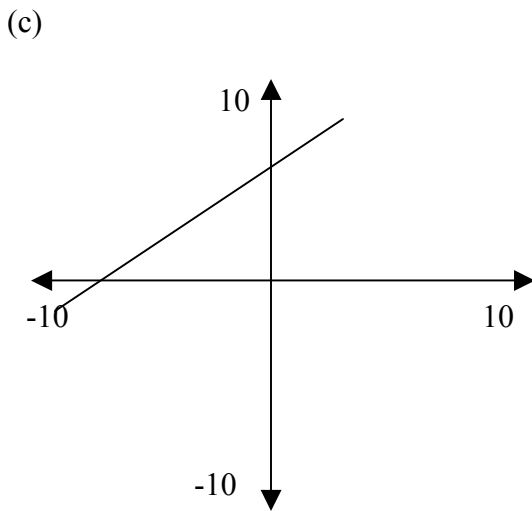
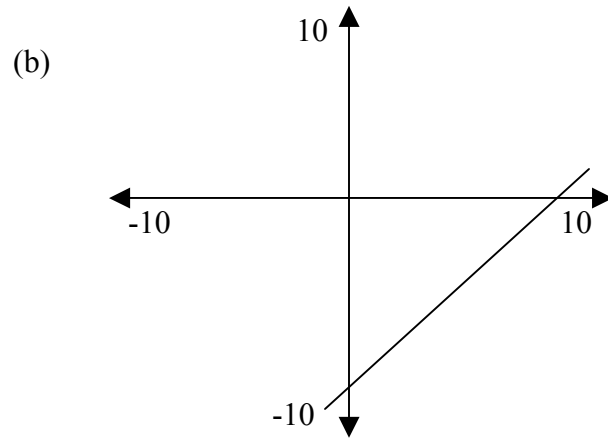
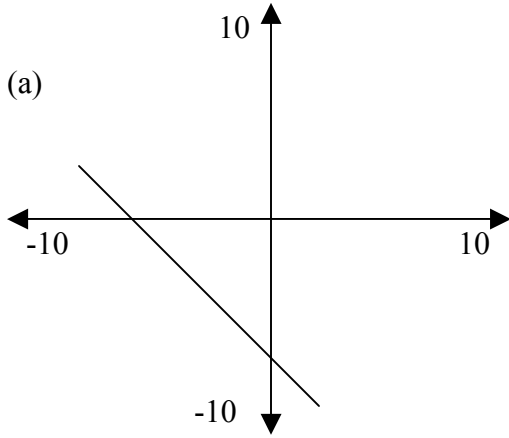
2. Simplify the complex fraction $\frac{\frac{2}{x^2 + 2x - 8} + \frac{1}{x^2 - 7x + 10}}{\frac{3}{x^2 - x - 20} + \frac{1}{x^2 - 3x + 2}}$.

- (a) $\frac{4x^2 - 3x + 2}{3(2x - 1)(x + 4)}$ (b) $\frac{3(2x - 1)(x + 4)}{4x^2 - 3x + 2}$ (c) $\frac{3(x - 1)(x - 2)}{2(x + 1)(2x - 7)}$ (d) $\frac{2(x + 1)(2x - 7)}{3(x - 1)(x - 2)}$

3. Solve the inequality $|3 - 5x| - 3 < 3$

- (a) $x > -\frac{3}{5}, x < -\frac{3}{5}$ (b) $-\frac{3}{5} < x < \frac{9}{5}$ (c) $x > \frac{9}{5}, x < -\frac{3}{5}$ (d) $-\frac{3}{5} < x < -\frac{3}{5}$

4. Identify the graph of the line that has the given slope and y-intercept. $m = -1$; y-intercept: $(0, -7)$.



5. If $f(x) = 2x - 4$ and $g(x) = 3x$, find $(f \circ g)(-7)$.

(a) -30

(b) -29

(c) -46

(d) -45

6. $\frac{1}{9} = 27^{6x-3}$. Find x .

(a) $\frac{7}{18}$

(b) $\frac{1}{6}$

(c) $\frac{11}{18}$

(d) $\frac{1}{18}$

7. $\log_6(5x+9) = 4$. Find x .

(a) 3

(b) $\frac{4087}{5}$

(c) 261

(d) $\frac{1287}{5}$

8. Solve the following linear system:

$$3x + 4y = -11$$

$$-x + y = 6$$

(a) $(-4, 10)$

(b) $(-5, -1)$

(c) $(-5, 1)$

(d) $\left(1, -\frac{7}{2}\right)$

9. Simplify $\frac{\sin u}{1 - \cos u} - \frac{1 + \cos u}{\sin u} =$

(a) $\tan u$

(b) $-\sin u$

(c) $2 + \cos u$

(d) 0

10. Find the determinant of the matrix

$$\begin{pmatrix} 8 & 4 \\ -10 & -8 \end{pmatrix}$$

(a) 6

(b) -24

(c) -104

(d) 24