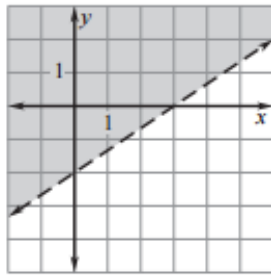


Math III Spiral Review 4

1. Simplify: $(4 - 3i)^2 + 4(9 + 2i)$
2. Identify the vertex (as an ordered pair) of the quadratic: $f(x) = 2x^2 + 12x + 9$
3. Identify the transformations from the parent function $f(x) = x^2$: $f(x) = -(x + 3)^2 - 1$
4. Identify the domain and the range in interval notation: $f(x) = (x + 1)^2 - 5$

5. **Multiple Choice** Which inequality is represented by the graph shown?



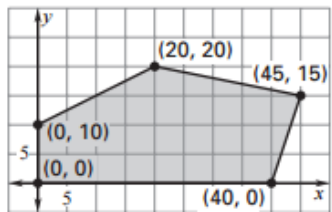
- (A) $y < \frac{2}{3}x - 2$
- (B) $y \leq \frac{2}{3}x - 2$
- (C) $y > \frac{2}{3}x - 2$
- (D) $y \geq \frac{2}{3}x - 2$
- (E) $y \neq \frac{2}{3}x - 2$

6. **Multiple Choice** What is the standard form of the quadratic function

$$y = -5(x + 2)^2 + 18?$$

- (A) $y = -5x^2 - 20x - 2$
- (B) $y = 5x^2 - 20x - 2$
- (C) $y = 5x^2 - 20x + 2$
- (D) $y = -5x^2 + 20x - 2$
- (E) $y = -5x^2 + 20x + 2$

7. **Multiple Choice** Given the feasible region shown, which is the maximum value of the objective function $C = 6x + y$?



- (A) 0
- (B) 10
- (C) 140
- (D) 240
- (E) 285

9. In which direction is the graph of $f(x) = \frac{5}{x+b}$ translated when b increases?

- A left
- B right
- C up
- D down

8. Convert to Vertex Form: $f(x) = 3x^2 - 6x - 2$

10. **Multiple Choice** What is a rule for the n th term of the arithmetic sequence with $a_{21} = 147$ and common difference $d = 11$?

- (A) $a_n = 11n - 21$
- (B) $a_n = 11n - 42$
- (C) $a_n = 11n + 21$
- (D) $a_n = 11n + 32$
- (E) $a_n = 11n - 84$