

**Instructions:** Show all work. Use exact answers unless specifically asked to round. Reduce as much as possible. Be sure to answer all parts of each question.

1. Factor completely.

a.  $axy + by - 4ax - 4b$

$$y(ax+b) - 4(ax+b) = (ax+b)(y-4)$$

b.  $5n^4 + 10n^3 + 40n^2$

$$5n^2(n^2 + 2n + 8)$$

c.  $x^2 + 11x - 42$

$$(x+14)(x-3)$$

d.  $30x^2 - 41x + 7$

$$(5x-1)(6x-7)$$

e.  $x^2y^3 - x^4y^2 - 6x^4y$

$$x^2y(y^2 - x^2y - 6x^2)$$