

Assume axioms apply to all variable on this exam.

1. Solve showing all steps and reasoning: $3x + 2 = 10$

2. Simplify showing all steps and reasoning: $\frac{125}{500}$

3. Simplify (multiply) showing all steps and reasoning: $(3x + 2)(6x + 1)$

4. Factor by splitting the middle term, showing all steps and reasoning: $x^2 + 3x + 2$

5. Factor showing all steps and reasoning: $4x^2 - 9$

SHOW ALL STEPS/w/reasoning, you may use theorems we proved prior to each of these.

6. Prove FOIL: for real numbers, a, b, c, d :

$$(a + b)(c + d) = ac + ad + bc + bd$$

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7. Prove PP2: for real numbers, x, y :

$$(x + y)^2 = x^2 + 2xy + y^2$$