

Please remember that each test is different, and the style and emphasis of the questions will vary from semester to semester.

- [10] 1. Check the box next to the choice which provides the most complete and correct statement.
(You may check only one box per question.)

(a) The set defined by the following number line:



can be denoted as

- ☐ $(-\infty, -3) \cup (0, 4)$
☐ $[-\infty, -3] \cup [0, 4]$
☐ $(-\infty, -3] \cup [0, 4)$
☐ $(-\infty, -3] \cup [0, 4]$
☐ $(-\infty, -3] \cup [0, 4]$
- (b) The lowest common denominator of $\frac{2}{(x+1)^2}$, $\frac{x}{3(x+1)}$ and $\frac{x-2}{6x^2}$ is
- ☐ $18x^2(x+1)^3$
☐ $2x(x-2)$
☐ $3x(x+1)$
☐ $6x^2(x+1)^2$
☐ $36x^3(x+1)^3(x-2)$
- (c) $(-32)^{\frac{3}{5}} =$
- ☐ 8
☐ -8
☐ 16
☐ -16
☐ is undefined
- (d) $\frac{|-3| - |7|}{|2 - 4|} =$
- ☐ 0
☐ 5
☐ -5
☐ 2
☐ -2

(e) The polynomial $3x^3 + 2x^2 - 12x - 8$ can be completely factored as

☐ $(3x + 2)(x^2 - 4)$

☐ $(3x + 2)(x^2 + 4)$

☐ $(3x + 2)(x - 2)(x + 2)$

☐ $(3x - 2)(x^2 + 4)$

☐ $(3x - 2)(x - 2)(x + 2)$

2. Simplify each of the following expressions.

[3] (a) $\frac{3x^5y^{-2}}{(2x^{-1}y^3)^{-2}}$

[3] (b) $3x\sqrt[3]{54x^5} + 4\sqrt[3]{16x^8}$

[3] (c) $\frac{3x}{2 - \sqrt{x+4}}$

[4] (d) $\frac{3}{8x^2 + 6x - 9} - \frac{4}{16x^2 - 9}$

3. Solve each of the following equations.

[5] (a) $\frac{2}{x^2 + 6} = \frac{1}{x^2 - 5}$

[6] (b) $x + 3 + \sqrt{9 - x} = 0$

[6] (c) $|2x - 5| = 3 - 5x$