

Exam II Practice

Math 135: Intermediate Algebra

November 20, 2007

Useful Formulas

$$\text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m_{\text{perp}} = -\frac{1}{m}$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$\text{Distance} = \text{Rate} \times \text{Time}$$

$$\text{Area of rectangle} = \text{Length} \times \text{Width}$$

$$\text{Area of triangle} = \frac{1}{2} \times \text{Base} \times \text{Height}$$

$$\text{Area of circle} = \pi \times \text{Radius}^2$$

$$\text{Surface area of sphere} = 4\pi \times \text{Radius}^2$$

Problems

1. Multiply: $(x + 2)(3x + 1)$
2. Simplify: $\frac{6x^2y^3z^4}{2x^3y}$
3. Divide: $(3x^3 - 2x + 1) \div (x + 2)$
4. Factor: $12x^2 + 5x - 2$
5. Solve: $x^2 - 2x - 8 = 0$
6. The sum of two consecutive even integers is 286. Find the integers.
7. The width of a rectangular playing field is 5 meters less than twice its length. If the playing field has an area of 700 square meters, find its length and width.
8. A bicyclist traveling at a constant speed of 10 feet per second is 75 feet ahead of a car when the car starts accelerating. The car accelerates at a constant rate of 2 feet per second each second, so that t seconds after it starts it has travelled a distance of t^2 feet.
 - (a) How long after the car starts does it overtake the bicycle?

- (b) How far are they from the car's starting point at that time?
- (c) How far are they from the bicycle's starting point at that time?