

February 28, 2007

Section 8.1

Problem #11

Domain of  $f(x, y) = x + 3y$

Answer:  $x$  and  $y$  can each be all real numbers

Problem #13

$$f(x, y) = \frac{x}{x + y}$$

domain:  $x + y \neq 0$

Problem #15

$$f(x, y) = \sqrt{16 - x^2 - y^2}$$

$$16 - x^2 - y^2 \geq 0$$

$$16 \geq x^2 + y^2$$

$$x^2 + y^2 \leq 16$$

Problem #33

$$z = f(x, y) = x^2 + y^2$$

Find some level curves

$$z_0 = 0$$

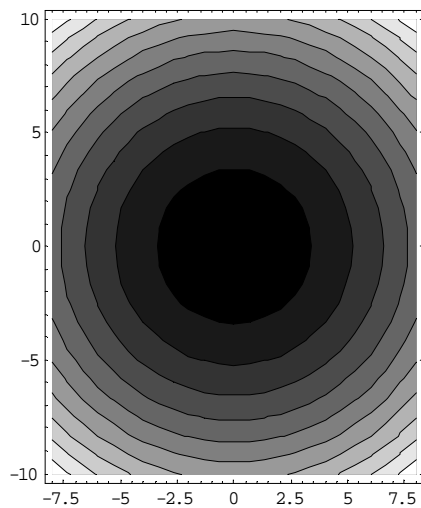
level curve  $x^2 + y^2 = 0$ : point

$$z_0 = 1$$

level curve  $x^2 + y^2 = 1$ : circle centered at origin, radius 1

$$z_0 = 4$$

level curve  $x^2 + y^2 = 4$ : circle centered at origin, radius 2



Problem #35

$$z = f(x, y) = 1 - x^2 - y^2$$

