

**Ex 1** Consider the function  $z = g(x, y) = yx^2 + y$ . Sketch the following

(a) The trace of  $g(x, y)$  at  $y = -1$

(b) The trace of  $g(x, y)$  at  $x = -1$

(c) The level curve of  $g(x, y)$  with  $z = -1$

**Ex 2** LotSW Incorporated produces two top-selling items: replicas of the sword Andúril and replicas of Jedi light sabres. Light sabre replicas cost \$25 each to produce while Andúril replicas cost \$35 each to produce. Light sabres sell for \$100 each while Andúril replicas sell for \$150 each. There is a fixed overhead cost of \$1500 associated with producing these items every month. Find the profit function and determine the profit obtained from producing and selling 50 swords and 75 light sabres.

**Ex 3** Recall that the present value of an investment,  $B$ , at interest rate,  $r$ , compounded continuously, for  $t$  years is given by the formula  $P(B, r, t) = Be^{-rt}$ . Compute  $P(2000, .05, 3)$  and interpret the value in context.