

### Finding Global Maxima and Minima

Find the (global) maximum and minimum of the followings functions, if they exist:

1.  $A(x) = x(100 - x)$ ,  $0 \leq x \leq 50$

2.  $h(t) = t^3 - 3t + 1$ ,  $0 \leq t \leq 3$

3.  $MR(q) = .01q^2 - q + 13$ ,  $-10 \leq q \leq 100$

4.  $D(x) = \sqrt{x^2 - x + 1}$ ,  $0 \leq x \leq 1$

5.  $g(x) = \cos x + \sin x$ ,  $0 \leq x \leq \pi$

6.  $s(r) = 2\pi r^2 + \frac{20}{r}$ ,  $r > 0$

7.  $f(x) = x^{\frac{1}{3}}$ ,  $1 \leq x \leq 8$

8.  $p(x) = \frac{27k}{x} + \frac{8k}{(8-x)}$ ,  $0 < x < 8$ , where  $k$  is a positive constant.