

Eq. point: $D = S$

$$49 - x^2 = 4x + 4$$

$$\rightarrow x^2 + 4x - 45 = 0$$

$$(x - 5)(x + 9) = 0$$

$$x = 5, \cancel{x = -9}$$

(5, 24) ^{price}
demand
supply

$$CS = \int_0^5 (49 - x^2) dx - 5(24)$$

$$= 49x - \frac{x^3}{3} \Big|_0^5 - 120$$

$$= \left(49(5) - \frac{5^3}{3} \right) - 120$$

$$= 203.3 - 120$$

$$= 83.3$$

27 Suppose the supply function for a good is $p = 4x^2 + 2x + 2$. If the equilibrium price is \$422. What is the producers' surplus.

$$PS = x_i p_i - \int_0^{x_i} \text{supply } dx$$

