

1. For a firm with the cost function  $TC = 2Q^3 - 8Q^2 + 10Q + 28$ , below what price will they shut down in the short run?
2. A firm has the cost function  $C(Q) = 4Q^2 + 12Q + 36$ . It operates in a perfectly competitive market.
  - a.) At what price will this firm make exactly zero profit?
  - b.) What is the firm's profit maximizing quantity if price is \$40? How much profit does the firm make?
3. For the following marginal product of labor, what is the amount of labor the firm should hire if the wage rate is 10 and the output good is sold at a price of 20?

$$MP_L = 5L^{0.5}$$

4. For each of the following circumstances, draw an example of the associated graph. Make sure to include MC, P, MR, and ATC.
  - a.) A firm makes positive profit.
  - b.) A firm makes zero profit.
  - c.) A firm makes negative profit.