

**Problem Set #3**  
**Suggested solutions**

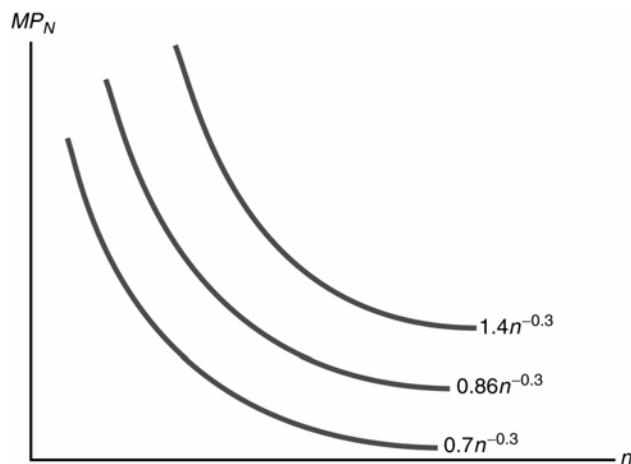
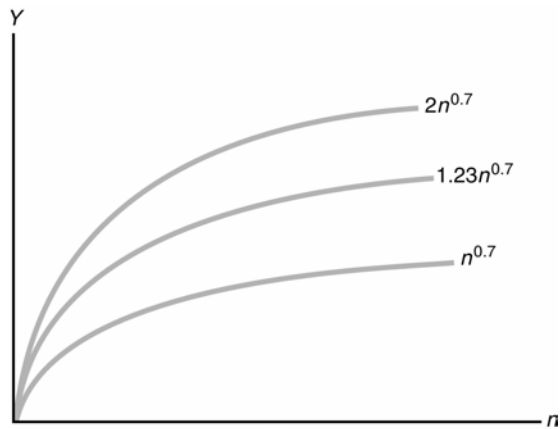
13.  $Y = zK^{0.3}n^{0.7}$

- (a)  $Y = n^{0.7}$ . See the top figure below. The marginal product of labor is positive and diminishing.
- (b)  $Y = 2n^{0.7}$ . See the figures below.
- (c)  $Y = 2^{0.3}n^{0.7} \approx 1.23n^{0.7}$ . See the figures below.
- (d) See the bottom figure below.

$$z = 1, K = 1 \Rightarrow MP_N = 0.7n^{-0.3}$$

$$z = 2, K = 1 \Rightarrow MP_N = 1.4n^{-0.3}$$

$$z = 1, K = 2 \Rightarrow MP_N = 2^{0.3} \times 0.7n^{-0.3} \approx 0.86n^{-0.3}$$



2. In a one period model, taxes must be exactly equal to government spending. A reduction in taxes is therefore equivalent to a reduction in government spending. The result is exactly opposite of the case of an increase in government spending that is presented in the text. A reduction in government spending induces a pure income effect that induces the consumer to consume more and work less. At lower employment, the equilibrium real wage is higher because the marginal product of labor rises when employment falls. Output falls, consumption rises, employment falls and the real wage rises.