

EXAM REVIEW → PART II

$$b) F_{\text{original}} = \frac{kq_1q_2}{r^2}$$

$$F_{\text{new}} = \frac{k(3q_1)q_2}{(3r)^2}$$

$$= \frac{3}{9} \frac{kq_1q_2}{r^2}$$

$$= \frac{1}{3} F_{\text{original}} = \frac{1}{3}(0.08\text{N})$$

$$= 0.027\text{N}$$

$$7) \quad g_{\text{original}} = \frac{GM}{r^2} = 20 \text{ m/s}^2$$

$$g_{\text{new}} = \frac{G(6M)}{(2r)^2}$$

$$= \frac{6}{4} \frac{GM}{r^2} = \frac{3}{2} g_{\text{original}} = \frac{3}{2} (20 \text{ m/s}^2)$$

$$= 30 \text{ m/s}^2$$

$$8) \quad g_c = 18 g_A$$

$$\frac{G(2M_A)}{(x r_A)^2} = \frac{18 G M_A}{r_A^2}$$

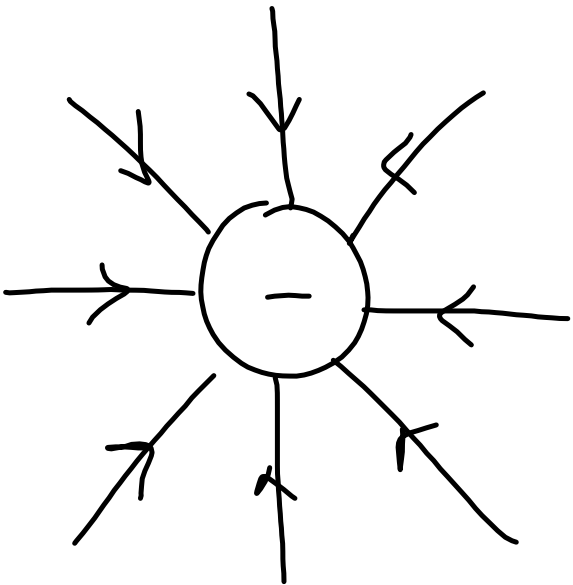
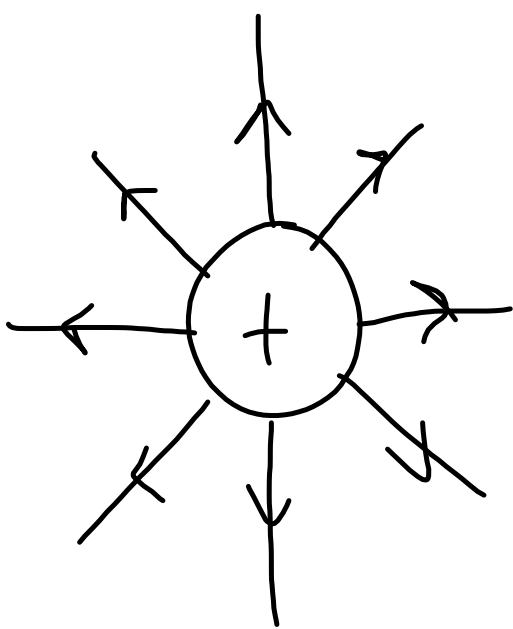
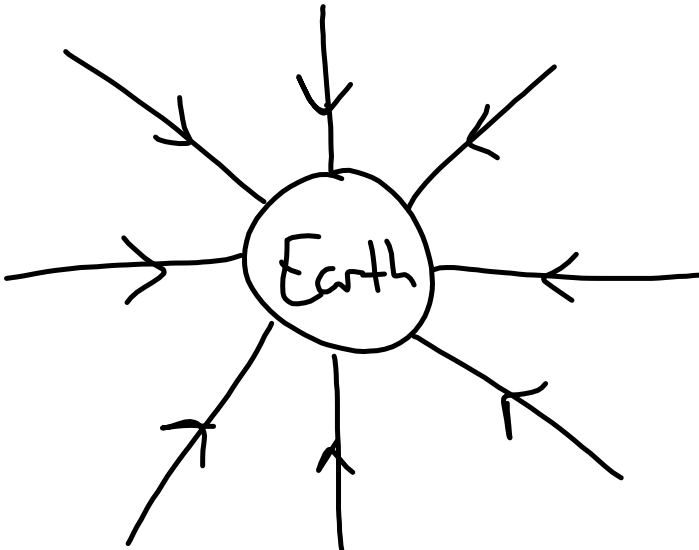
$$\frac{2}{x^2} \frac{G M_A}{r_A^2} = 18 \frac{G M_A}{r_A^2}$$

$$\frac{2}{x^2} = 18$$

$$\sqrt{x^2} = \frac{2}{18} = \sqrt{\frac{1}{9}}$$

$$x = \frac{1}{3}$$

a)



10) 1, 3, 4, 5, 6, 10

11) 2, 4, 5