

$$10) \int_1^9 x^{\frac{1}{2}} + x^{-\frac{1}{2}} dx$$

$$= \left[ \frac{2}{3} x^{\frac{3}{2}} + 2x^{\frac{1}{2}} \right]_1^9$$

$$= \left( \frac{2}{3} \times 9^{\frac{3}{2}} + 2 \times 9^{\frac{1}{2}} \right) - \left( \frac{2}{3} \times 1^{\frac{3}{2}} + 2 \times 1^{\frac{1}{2}} \right)$$

$$= \left( \frac{2}{3} \times 27 + 2 \times 3 \right) - \left( \frac{2}{3} + 2 \right)$$

$$= 24 - 2\frac{2}{3} = \frac{64}{3}$$

$$11) a = a \quad a + d = ar$$

$$ar^2 = 2(a + 2d) = 2a + 4d$$

$$ar^2 = 2a + 4d \quad (1)$$

$$ar = a + d \quad (2)$$

$$(1) - 2 \times (2)$$

$$ar^2 - 2ar = 2d$$

$$\Rightarrow d = \frac{ar^2 - 2ar}{2}$$

$$\text{From } d = ar - a$$

$$ar - a = \frac{ar^2 - 2ar}{2}$$

$$r - 1 = \frac{r^2 - 2r}{2}$$

$$\Rightarrow r^2 - 2r = 2r - 2 \Rightarrow r^2 - 4r + 2 = 0$$