17) $f(x) = 9x + 3$ Find: $\dfrac{f(x+h) - f(x)}{h}$

$f(x+h) = 9(x+h) + 3$

$= 9x + 9h + 3$

$\dfrac{9x + 9h + 3 - (9x + 3)}{h}$

$\dfrac{\cancel{9x} + 9h \cancel{+3} \cancel{-9x} \cancel{-3}}{h} = \dfrac{9\cancel{h}}{\cancel{h}} = \boxed{9}$

21) $y = x\sqrt{16-x^2}$ ~~$= x(4-x)$~~ x, y -int.

x-int: $(0)^2 = (x\sqrt{16-x^2})^2$

$$0 = x^2(16-x^2)$$

$x^2 = 0$ or $16 - x^2 = 0$

$x = 0$

$16 = x^2$

± 4 ~~$= x$~~

$$\boxed{(0,0),\ (4,0),\ (-4,0)}$$

y-int: $y = 0\sqrt{16-0^2}$

$= 0$

$$\boxed{(0,0)}$$

86). $2\log_{10}\sqrt{x} + \log_{10} x^{1/3}$

$= \log_{10}(\sqrt{x})^2 + \log_{10} x^{1/3}$

$= \log_{10} x + \log_{10} x^{1/3}$

$= \log_{10}(x^1 \cdot x^{1/3}) = \log_{10}(x^{4/3})$ =

$= \log_{10}(x\sqrt[3]{x})$

Laws of Log.

1) $\log_a b + \log_a c$

$= \log_a(bc)$

2) $\log_a b - \log_a c$

$= \log_a\left(\frac{b}{c}\right)$

3) $c\log_a b = \log_a b^c$

97) $A = 2\pi r^2 + 2\pi r h$ for $\boxed{\text{positive}}$ r

$2\pi r^2 + 2\pi h r - A$

(hint: use quad. formula)

$= ax^2 + bx + c$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-2\pi h \pm \sqrt{4\pi^2 h^2 - 4(2\pi)(-A)}}{2(2\pi)} = \frac{-2\pi h \pm \sqrt{4\pi^2 h^2 + 8\pi A}}{4\pi}$$

$$= \boxed{\frac{-2\pi h + \sqrt{4\pi(\pi h^2 + 2A)}}{4\pi}} = \cancel{-2\pi h \pm 2\sqrt{\cdot}}$$

$$\sin^2 x + \boxed{\cos 2x} - \cos x = 0$$

$$(1 - \cos^2 x) + \cos 2x - \cos x = 0$$

$$1 - \cos^2 x + \cos 2x - \cos x = 0$$

$$\cancel{1} - \cos^2 x + (2\cos^2 x - \cancel{1}) - \cos x = 0$$

$$\cos^2 x - \cos x = 0$$

$$\cos x(\cos x - 1) = 0$$

$0 \le x < 2\pi$

$$\begin{aligned} \cos 2u &= \cos^2 u - \sin^2 u \\ &= 2\cos^2 u - 1 \\ &= 1 - 2\sin^2 u \end{aligned}$$

$\cos x = 0$ or $\cos x - 1 = 0$

$\boxed{x = \frac{\pi}{2}, \frac{3\pi}{2}}$

$\cos x = 1$

$\boxed{x = 0}$

95) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$ for a

$$-\frac{y}{b}-\frac{z}{c} \qquad -\frac{y}{b}-\frac{z}{c}$$

$$\frac{x}{a}=\frac{\left(1-\frac{y}{b}-\frac{z}{c}\right)}{1}$$

$$a=\frac{x}{1-\frac{y}{b}-\frac{z}{c}}$$