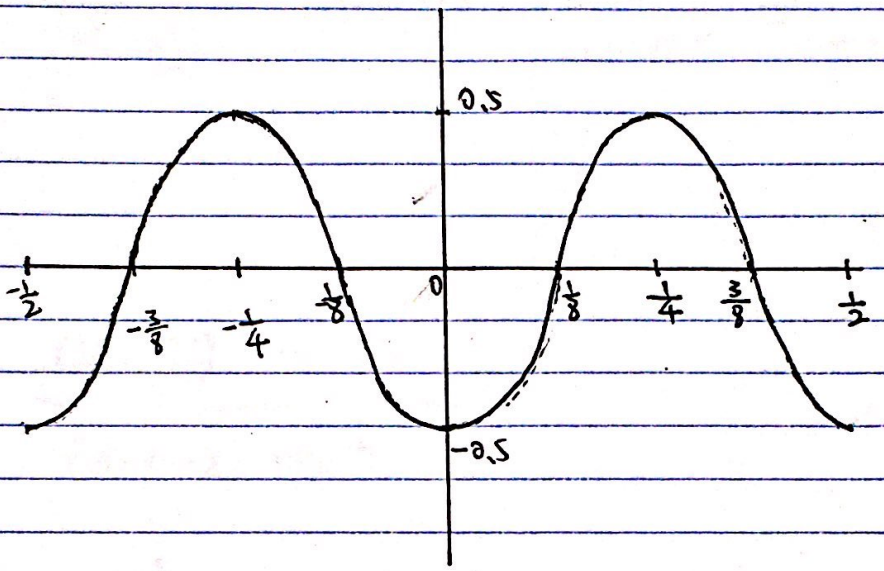
1.3

1. $0.5\sin(2\pi(2)t - \frac{\pi}{2})$



2. a) The graph is inverted.

b) $A\cos(2\pi t + \phi + \frac{\pi}{2})$

3. $\frac{5\pi}{3}$

2.

(1) $\csc(\theta)\cos(\theta)\tan(\theta)$

$= \frac{1}{\sin(\theta)} \cdot \cos(\theta) \cdot \frac{\sin(\theta)}{\cos(\theta)} = 1.$

(2) $\frac{\cot(x)\cos(x)}{\tan(-x)\sin(\frac{\pi}{2}-x)}$

$= \frac{\frac{1}{\tan x}\cos x}{-\tan x \cos x}$

$= -\frac{1}{\tan^2 x}$

(3) $$\frac{\sin(x+y)}{\cos(x+y)} = \frac{\sin x\cos y + \cos x\sin y}{\cos x\cos y - \sin x\sin y}$$

divide all by $\cos x\cos y$

$$= \frac{\frac{\sin x}{\cos x} + \frac{\sin y}{\cos y}}{1 - \frac{\sin x\sin y}{\cos x\cos y}}$$

$$= \frac{\tan x + \tan y}{1 - \tan x\tan y}$$

3.

① $\sum_{i=0}^{3} (6 + \sqrt{4^i})$

$= (6+\sqrt{4^0}) + (6+\sqrt{4^1}) + (6+\sqrt{4^2}) + (6+\sqrt{4^3})$

$= 24 + 1 + 2 + 4 + 8$

$= 39$

② $\sum_{n=1}^{\infty} \frac{-1^{(n)} \cdot A \sin 2\pi(n) f t}{n^2}$

(3) $\sum_{i=0}^{1000} (4i+1)$

4.

① $z^2 = -4$

assume $a^2 = 4$ We know $a = \pm 2$

$-1 \cdot a^2 = -1 \cdot 4$

$i^2 a^2 = -4$

$(ia)^2 = -4$.

$z = ia$

since $a = \pm 2$

$z = \pm 2i$

② a) $x + y = \boxed{5 + i}$

b) $xy = (3+2i)(2-i)$

$= (3 \cdot 2 - 2 \cdot -1) + (2 \cdot 2 + 3 \cdot -1)i$

$= (6+2) + (4-3)i = \boxed{8 + 1i}$

③ $(0+i)(0+i)$

$= (0 \cdot 0 - 1 \cdot 1) + (0+0)i$

$= -1$.