

1.2.2

$$P = (2, -2, 1) \quad q = (2, 3, 2)$$

$$P + q = (4, 1, 3) \quad P - q = (0, -5, -1)$$

$$|P| = \sqrt{2^2 + (-2)^2 + 1^2} = \sqrt{9}$$

$$|q| = \sqrt{2^2 + 3^2 + 2^2} = \sqrt{17}$$

$$|P+q| = \sqrt{4^2 + 1^2 + 3^2} = \sqrt{26}$$

$$|P-q| = \sqrt{0^2 + (-5)^2 + (-1)^2} = \sqrt{26}$$

$$|P+q|^2 = |P|^2 + |q|^2$$

Part 1) $(\sqrt{26})^2 = (\sqrt{9})^2 + (\sqrt{17})^2 = 26 = 9 + 17$ so it is correct & equal

$$|P-q|^2 = |P|^2 + |q|^2$$

Part 2) $(\sqrt{26})^2 = (\sqrt{9})^2 + (\sqrt{17})^2 = 26 = 9 + 17$ so equal & correct