**Year 2 Pure Chapter 7: Double Angle - Exam Questions (Answers)**

**1.**

5(1 – 2sin2 x) + 3 sin x = 4

5 – 10sin2 x + 3 sinx = 4

10 sin2 x + 3 sin x = 4

10sin2 x – 3sin x – 1 = 0

sin x = 0.5

x = π/6

x = π – π/6 = 5/6π

and

sin x = -1/5

x = -0.201

x = π - -0.201 = 3.34

x = -0.201 + 2π = 6.08

Final Solution: π/6, 5/6π, 3.34, 6.08

**2.** 3(2cos²** – 1) – cos** + 1 = 0 B1

6c² – c – 2 = 0

 cos ** = ****, **** M1

**** A1

360° – 48° = 312° A1ft

cos ** = **** A1

360° – 120° = 240° A1ft 6

 [6]

**3.** (a) sec *x*  2  cos *x*   M1

 A1 2

(b) cos2*x*  cos(*x* + *x*)
  cos *x* × cos *x* – sin *x* × sin *x*  cos2*x* – sin2*x* M1  cos2*x* – (1 – cos2*x*)
  2 cos2*x* – 1 A1 2

 (c) (2 cos2*x* – 1) + 3 cos *x* – 1  0 M1

2 cos2*x* + 3 cos *x* – 2  0

(2cos *x* – 1)(cos *x* +2)  0 m1

cos *x*  –2  no solutions B1
 M1

cos *x*     A1 ft 5

 [9]

**4.** (a) (i)  B1

(ii)  B1

(b)  M

  M

  A1

(c)  B1

  M

  A1

  B1

 [9]

**5.**  B1

 M1A1

 M1

 A1 (any two)
 A1 (all rest +
 no others) 6