Question 1

1.1 $d_{AC} = \sqrt{(1-3)^2 + (6+4)^2}$ ✓
$d_{AC} = \sqrt{104}$
$d_{AC} = 10{,}20$ ✓ (2)

1.2 $E(2;1)$ ✓✓ (2)

1.3 $m_{BC} = \frac{4+4}{15-3} = \frac{2}{3}$ ✓✓ (2)

1.4 $m_{AD} = -\frac{3}{2}$ ✓✓
$6 = -\frac{3}{2}(1) + c$ ✓
$y = -\frac{3}{2}x + \frac{15}{2}$ ✓ (4)

1.5 $tan\theta = \frac{2}{3}$ ✓
$\theta = 33{,}69°$ ✓ (-1 rounding) (2)

1.6 $m_{AC} = -5$ ✓
$RA = 78{,}69°$ ✓
$\alpha = 180° - 78{,}69° = 101{,}31°$ ✓
$A\hat{C}B = 101{,}31° - 33{,}69° = 67{,}62°$ ✓ (4) **[16]**

Question 2

2.1.1 $\frac{8-7}{a-5} \times \frac{9-4}{-1-0}$ ✓ $= -1$ ✓

$\frac{1}{a-5} \times \frac{5}{-1} = -1$

$\frac{1}{a-5} = \frac{1}{5}$ ✓

$a = 10$ ✓ (4)

2.1.2 $\sqrt{(a+1)^2 + (8-9)^2}$ ✓ $= \sqrt{(a-0)^2 + (8-4)^2}$ ✓

$a^2 + 2a + 2 = a^2 + 16$ ✓

$2a = 14$

$a = 7$ ✓ (4)

2.2 $y = -\frac{p}{3}x + 2$ ✓✓

$-\frac{p}{3} = -1$ ✓

$p = 3$ ✓ (4)

2.3 $\frac{k+4-2}{2k-3} = \frac{5-2}{6-3}$ ✓✓

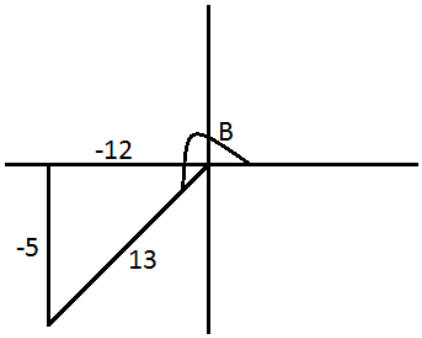
$\frac{k+2}{2k-3} = \frac{3}{3}$

$k + 2 = 2k - 3$ ✓

$5 = k$ ✓ (4) **[16]**

Question 3

3.1



✓(quadrant) ✓(-5 and -12) ✓β (3)

3.2.1 $cos\beta = \frac{-12}{13}$ ✓✓ (2)

3.2.2 $\sqrt{1+\left(\frac{-5}{-12}\right)^2}$ ✓ $= \sqrt{\frac{169}{144}} = \frac{13}{12}$ ✓✓ (3)

3.3 $RA = 22{,}62°$ ✓

$\beta = 202{,}62°$ ✓ (2) **[10]**

Question 4

4.1 $\frac{-sin30°✓.cos80°✓}{cos80°.-cos45°✓} = \frac{\left(-\frac{1}{2}\right)✓}{\left(-\frac{1}{\sqrt{2}}\right)✓} = \frac{\sqrt{2}}{2}$ ✓ (6)

4.2 $(tanx)✓(-cosx)✓\left[(-sinx)✓ + \frac{cos^2x✓}{-sinx✓}\right] = \left(\frac{sinx}{cosx}\right)✓(-cosx)\left[\frac{sin^2x+cos^2x}{-sinx}✓\right]$

$= -sinx\left(\frac{1✓}{-sinx}\right) = 1$ ✓ (9) **[15]**

Question 5

5.1 $LHS = \frac{sin^2\theta}{cos^2\theta}$ ✓ $+ 1$

$LHS = \frac{sin^2\theta + cos^2\theta \checkmark}{cos^2\theta \checkmark}$

$LHS = \frac{1 \checkmark}{cos^2\theta}$

$LHS = RHS$ (4)

5.2.1 $LHS = \frac{8}{1-cos^2C \checkmark} - \frac{4}{1+cosC}$

$LHS = \frac{8}{(1-cosC)(1+cosC)\checkmark} - \frac{4}{1+cosC}$

$LHS = \frac{8-4(1-cosC)\checkmark}{(1-cosC)(1+cosC)\checkmark}$

$LHS = \frac{8-4+4cosC}{(1-cosC)(1+cosC)}$

$LHS = \frac{4+4cosC \checkmark}{(1-cosC)(1+cosC)}$

$LHS = \frac{4(1+cosC)\checkmark}{(1-cosC)(1+cosC)}$

$LHS = \frac{4}{1-cosC}$ (-1 if not finished)

$LHS = RHS$ (6)

5.2.2 $C = 0°;\ 180°; 360°$ ✓✓✓ (3) **[13]**

Question 6

6.1 $x = 320{,}00°$ ✓ (1)

6.2 $tanx = \frac{sinx}{cosx}$ ✓✓ $x \in [0°; 360°]$ ✓ $x \neq 90°\ or\ 270°$ ✓ (4)

6.3 $2 = \tan(x + 15°)$ ✓

$x + 15° = 63{,}43°$ ✓ $+ n.180°$

$x = 48{,}43°$ ✓ $+ n.180°$ $n\epsilon Z$ ✓

$x = 48{,}43°$ or $x = 228{,}43°$ ✓ (5)

6.4 $1 - sin^2\theta$ ✓ $+ 3sin\theta + 3 = 0$

$0 = sin^2\theta - 3sin\theta - 4$ ✓

$0 = (sin\theta - 4)(sin\theta + 1)$ ✓

$sin\theta = 4$ ✓ or $sin\theta = -1$ ✓

$No\ solution$ ✓ $\theta = 270° + n.360°$ ✓$n\epsilon Z$ (7)

6.5 $(m - m^{-1})^2 = (2)^2$ ✓

$m^2 - 2 + m^{-2} = 4$

$m^2 + m^{-2} = 6$ ✓

$7sinx = 6$ ✓

$sinx = \frac{6}{7}$ ✓

$x = 59{,}00°$ ✓ or $x = 121{,}00°$ ✓ (6) **[23]**

Question 7

$tan48° = \frac{y}{x}$ ✓ $tan53° = \frac{y+1{,}2}{x}$ ✓

$y = xtan48°$ ✓ $y = xtan53° - 1{,}2$ ✓

$xtan48° = xtan53° - 1{,}2$ ✓

$1{,}2 = xtan53° - xtan48°$

$1{,}2 = x(tan53° - tan48°)$ ✓

$x = 5{,}54m$ ✓ **[7]**