1. **(T3.5 - E) (CI)** For the following expressions, factor the expression in the first column and then the corresponding trigonometric expression in the second column. What observations can you make? *(Cirrito 2.4.1, p39)*

a.	$x^2 - 1$	$sin^2(x) - 1$
b.	$x^2 - x - 2$	$cos^2(x) - cos(x) - 2$
c.	$x^2 - x$	$sin^2(x) - sin(x)$
d.	$2x^2 - x - 1$	$2cos^2(x) - cos(x) - 1$

2. **(SP5.2 - E) (CA)** Here are the results of Nadine's last 5 quiz scores: 75%, 83%, 67%,83%, 76%. *(Cirrito 13.3, p.474; Oxford 8.3, p.260)*

   a. Find her mean quiz score and find the standard deviation of her quiz scores.
   b. Nadine would like to raise her quiz average to 79%. What must be the score of her next quiz in order to get the average of 79%.
   c. Mr. D wants to raise ALL grades by 6%. What will be the new (i) mean and (ii) standard deviation of her quiz scores?

3. **(SP5.5, SP5.6 - R) (CI)** For the two events, *A* and *B*, it is known that: $P(A' \cap B') = 0.35$; P(*A*) = 0.25; P(*B*) = 0.6 (HINT: do not assume the events are independent). Find: *(Cirrito 15.2, p.508)*

   a. i. $P(A \cap B)$ ii. P(*B* | *A*) iii. $P(B' \mid A)$
   b. Can you draw a venn diagram for this problem? Draw one OR explain why you can't.
   c. Can you draw a tree diagram for this problem? If so, draw one OR explain why you can't.

4. **(T3.2 - R) (CI)** Recall our special right triangles. Use them to determine ***(Cirrito 10.1, p315)***

   a. (i) $sin\left(\frac{\pi}{3}\right)$ (ii) $cos\left(\frac{-2\pi}{3}\right)$ (iii) $tan\left(\frac{5\pi}{4}\right)$
   b. (i) $\sin^2(\pi/6) - \cos^2(\pi/4)$ (ii) $2\cos^2(\pi/3) - 1$
   c. (i) $\sin^{-1}(½)$ (ii) $\tan^{-1}(-1)$

5. **(A1.1 - E) (CI)** Given an arithmetic sequence wherein the first term is 5 and the fourth term is 17, determine:
   (Cirrito, 8.1, p241)
   a. The eighteenth term,
   b. The sum of the first twelve terms
   c. If the numbers 5 and 17 were the first two terms of a geometric sequence, what would be the next two terms of this geometric sequence?

6. (**A1.2 - N**) (**CI**) If ln(2) = 0.69 and ln(3) = 1.10 and ln(5) = 1.61, determine the values of: ***(Cirrito 7.4, p221)***

(a) ln(100) (b) ln(1.5) (c) ln(150) (d) ln(0.1)

(e) ln(135) (f) ln (1.2)

7. **(F2.2, F2.5, F2.6 - R) (CI)** For the following functions, determine: (i) the equation(s) of the asymptotes, (ii) the x- and y-intercept(s) and hence sketch the functions on graph paper, labelling these key features. State the transformations that were applied to the "parent" function as well. ***(Cirrito 5.3, p122)***

a. $g(x) = 5 - \frac{1}{2}e^x$ b. $h(x) = 2 + \ln(x - 5)$

8. (**T3.3 - N**) (**CA**) ***Identities***: An algebraic identity is an algebraic equation that true for every value of x. For example, the equation $(x + 2)^2 = x^2 + 4x + 4$ is going to be true, regardless of what number you substitute in for x. ***(Cirrito 10.2, p327)***

a. Substitute in $x = 1$, $x = 2$, $x = 5$ into BOTH sides of the equation and see what happens.
b. Is the algebraic equation $x^2 + y^2 = (x + y)^2 - 2xy$ an identity? True or False? Prove it.
c. We also have trig identities. Given the equation $\sin^2(x) + \cos^2(x) = 1$, use $x = \frac{\pi}{6}$ and $x = \frac{\pi}{4}$ to show that $\sin^2(x) + \cos^2(x) = 1$ could be an identity. How would you prove it?
d. Given the expression $2\sin(x)\cos(x)$:
    i. Evaluate $2\sin(x)\cos(x)$ for $x = 30°$. Then, use your answer to evaluate $\sin^{-1}$(ANS).
    ii. Evaluate $2\sin(x)\cos(x)$ for $x = 45°$. Then, use your answer to evaluate $\sin^{-1}$(ANS).
    iii. What observation do you make?
    iv. Graph the function $f(x) = 2\sin(x)\cos(x)$ to confirm your observation in Qdiii