1. **(GT3.3; CI)** Trig Identities. Given that the cosine ratio of an angle is $-\frac{3}{7}$ (i.e. $cos(x) = -\frac{3}{7}$) and that $\frac{\pi}{2} \le x \le \pi$;
   (Oxford 13.3, p.456)

   a. Draw a right triangle in the appropriate quadrant and label all known information about the angle.
   b. Determine the sine and tangent ratios of the angle.
   c. Use the information in the triangle to verify the identity $tan(x) = \frac{sin(x)}{cos(x)}$.

2. **(GT3.5; CI)** Linear Trigonometric Equations. Solve the following equations on $-\pi \le x \le \pi$;
   (Oxford 13.2, p.454)

   a. 2cos(x) - 1 = 0   b. 2 sin(x) + $\sqrt{3}$ = 0   c. $\frac{1}{\sqrt{3}}$ tan(x) + 1 = 0

3. **(SP5.6; CA)** Drug tests may be used by companies to screen potential employees. A given test for the drug Mathitis is determined to be 98.2% accurate in the sense that it identifies a person as a user or non-user of Mathitis 98.2% of the time. Each job applicant takes this test twice. The tests are done at separate times and are designed to be independent of each other. What is the probability that:
   (Oxford 3.5, p.89)

   a. A non-user fails both tests?
   b. A drug user is detected (i.e. s/he fails at least one test)
   c. A drug user passes both tests

4. **(A1.2, F2.6, F2.7; CA, CI)** Solve the following exponential equations. Present BOTH exact (hence CI) and approximate solutions (hence CA). *(Cirrito p.226, Ex 7.22)*

   a. $2^{x+1} = 3^{x-1}$ b. $6^{0.5x} = 4^{1-x}$

5. **(T3.5; CI)** Quadratic Trig Equations. Solve each of the following factored trigonometric equations given the domain of $0 \le x \le 2\pi$
   (Oxford 13.2, p.454)

   a. sin x cos x = 0
   b. sin x (cos x - 1) = 0
   c. cos x (sin x + 1) = 0

6. **(F2.6; CI)** Given the functions $f(x) = e^{2x+1}$ and $g(x) = \ln \sqrt{x}$;
   (Cirrito 5.3.3, p.131; 5.3.4, p.138)

   a. Sketch each function.
   b. Show that $(g \circ f)(x) = x + \frac{1}{2}$. Hence, are the 2 functions inverses of each other?
   c. Find the equation for $f^{-1}(x)$ and $g^{-1}(x)$.

7. **(SP4.7; CI)** A fair coin is tossed three times.
   (Cirrito 16.1, p.533)

   a. Draw a tree diagram representing this experiment.
   b. Fill out the following table with information about how many heads occur.

y	0	1	2	3
$P(Y = y)$				

   c. If the random variable Y denotes the number of heads that appear, find $P(Y \geq 2 \mid Y \geq 1)$.

8. **(F2.2; CA)** Given the function $g(x) = \frac{0.1x^4 - 2x}{2x - 6}$, $x \neq 3$
   (Cirrito 20.4, p.679)

   a. Determine the intercepts and asymptote(s) of this function.
   b. Determine the extrema of this function.
   c. Hence write down the intervals of increase and decrease of this function.
   d. Determine the instantaneous rate of change at x = 0 and at x = 4.