Assessment Instructions:

- The Assessment 1 is 10 problems and is worth 40 points. Each numbered problem will earn you a score of 1-4 based on your set up of the function, your use of course methods to solve and prove your solution and your statement of the solution.
- You will have 1 hour to complete AS-1.
- The AS-1 is closed book and closed notes.
- Calculators are not allowed on the Assessment.

1. Simplify the exponential expressions:

   (a) $\left(\dfrac{2h^{-3}j^{0}k^{2}}{2jh^{3}k^{3}j^{4}k^{-4}}\right)^{2}$

   (b) $\dfrac{2yx^{4}z^{3}}{(4x^{4}y^{0}z^{-4})^{2}(2yx^{-1})}$

   (c) $\dfrac{(m^{3}q^{4})^{-2}}{q^{2}mp^{-1}(2m^{5}p^{4})}$

2. Simplify the radical expressions:

   (a) $2\sqrt{80x^{4}y^{2}}$

   (b) $\sqrt[3]{43a^{5}b^{3}c^{8}}$

   (c) $\sqrt{5}(4+\sqrt{5})$

   (d) $\dfrac{2}{\sqrt{3}-5}$

   (e) $\dfrac{4\sqrt{7}}{\sqrt{14}+\sqrt{2}}$

   (f) $\sqrt{\dfrac{3}{5}}$

3. Simplify the rational expressions:

   (a) $\dfrac{2m^{2}-4m-30}{m+3}$

   (b) $\dfrac{x+2}{x-3}-\dfrac{x-3}{x+5}-\dfrac{1}{x^{2}+2x-15}$

(c) $\dfrac{2p+1}{3p-2} \cdot \dfrac{3p^2-23p+14}{2p+1}$

(d) $\dfrac{3}{2n^2-5n-3} \div \dfrac{1}{2n+1}$

4. Simplify the following complex expressions:

(a) $\dfrac{10}{3-i}$

(b) $(-5i)^3$

(c) i^{-25}

(d) $(\sqrt{-8})(\sqrt{-2})$

(d) $(4-i)(2+i)$

5. Factor the polynomial expressions:

(a) $27a^2 - 72a$

(b) $8x^2 - 16x - 32$

(c) $x^2 - 9$

(d) $-6p^2 - 13p + 28$

(e) $6x^3 + 5x^2 + 36x + 30$

(f) $4p^2 + 4p - 35$

(g) $45b^3 - 80b$

(h) $20p^3 + 35p^2 + 8p + 14$

6. Find the area of the trapezoids ($A = \frac{a+b}{2} \cdot h$, where a is a smaller base, b is a greater base and h is the height):

(a) $a = 3.1cm$, $b = 9.3cm$, $h = 6.7cm$

7. Find the area of the circle ($A = \pi r^2$, where r is the radius of a circle):

(a) $r = 5cm$

(b) $d = 10cm$, where d is a diameter

8. Find the solutions to the quadratic/quadratic-like equations (use any method which was considered in the class)

   (a) $-8 = -6x - 14x^2$

   (b) $2 + 11x = -5x^2$

   (c) $-2b^2 - 20b + 90 = -3b^2$

   (d) $6v^2 + 8v - 56 = 5v^2$

   (e) $(y-5)^2 - 11(y-5) + 24 = 0$

9. Find solutions to the radical equations:

   (a) $v = 7 + \sqrt{14 - 2v}$

   (b) $\sqrt{54 - 2n} + 10 = 16$

   (c) $n + 3 = \sqrt{4n + 8}$

   (d) $\sqrt{b-2} - 3 = -2$

10. Find solutions to the rational equations:

    (a) $\dfrac{n+7}{n+6} = \dfrac{3}{10}$

    (b) $1 = \dfrac{1}{n} + \dfrac{3}{4n^2}$

    (c) $\dfrac{r+9}{r+4} = \dfrac{3}{4}$

    (d) $\dfrac{2x+1}{x} = \dfrac{5}{x^2 - 2x} - 4$

    (e) $\dfrac{p-8}{4p} = \dfrac{8}{5}$

11. Find solutions to the absolute value equations:

    (a) $|2x + 5| = -2$

    (b) $|-x + 6| = 4$