Dawson College: Calculus I: 201-NYA-05 S17

September 9, 2011

Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 2 (B)

Question 1. *(4 marks)* Simplify the following expression:

$$\frac{(2x+1)^{1/2}-(x+2)(2x+1)^{-1/2}}{2x+1} = \frac{(2x+1)^{1/2} - \dfrac{x+2}{(2x+1)^{1/2}}}{2x+1}$$

$$= \frac{\dfrac{(2x+1)-(x+2)}{(2x+1)^{1/2}}}{2x+1} = \frac{x-1}{(2x+1)^{1/2}} \cdot \frac{1}{2x+1} = \frac{x-1}{(2x+1)^{3/2}}$$

Question 2. *(2 marks)* Factor the following expression:

$$(x-1)^3-8 = [(x-1)-2][(x-1)^2+(x-1)\cdot 2+2^2]$$
$$= (x-3)(x^2-2x+1+2x-2+4)$$
$$= (x-3)(x^2+3)$$

Question 3. *(4 marks)* Rationalize the numerator:

$$\frac{\sqrt{x+3}-\sqrt{x}}{3} \cdot \frac{\sqrt{x+3}+\sqrt{x}}{\sqrt{x+3}+\sqrt{x}} = \frac{(x+3)-\sqrt{x}\sqrt{x+3}+\sqrt{x}\sqrt{x+3}-x}{3(\sqrt{x+3}+\sqrt{x})}$$

$$= \frac{3}{3(\sqrt{x+3}-\sqrt{x})} = \frac{1}{\sqrt{x+3}-\sqrt{x}}$$