# Northern Michigan University (Marquette Co, MI)

Time:  15 minutes

1.  Compute the following product:

$(3x - 2)(x + 1)(3x + 2)$

$(3x-2)(3x+2)(x+1)$          $9x^2 - 4$

$(9x^2 - 4)(x+1)$                 $x + 1$
                                  _____
                          $9x^3 + 9x^2 - 4x - 4$

$$\boxed{9x^3 + 9x^2 - 4x - 4}$$

2.  Completely factor the following expression.  For full credit, have no fractions in the answer:

$4x^2 + 8x - 5$

$ac = -20$                    $b = 8$

$4\left(x - \frac{-10}{4}\right)\left(x - \frac{2}{4}\right)$

$4\left(x + \frac{5}{2}\right)\left(x - \frac{1}{2}\right)$

$2\left(x + \frac{5}{2}\right)\ 2\left(x - \frac{1}{2}\right)$

$$\boxed{(2x+5)(2x-1)}$$

3.  Simplify the following expression:

$\dfrac{4x^2 - 100}{2x^2 - 16x + 30}$

$\dfrac{4(x^2 - 25)}{2(x^2 - 8x + 15)}$    ;    $\dfrac{4(x+5)(x-5)}{2(x-3)(x-5)}$

$ac = 15$    $b = -8$       $\boxed{\dfrac{2(x+5)}{x-3}}$