Math 70 – Exam 3 Instructor: Y. Petersen

Name Key

1. Factor: $y^2 - 9y + 14$

$(y-2)(y-7)$

2. Factor: $p^4 - 1$

$(p^2+1)(p^2-1)$

$=(p^2+1)(p+1)(p-1)$

3. Factor: $-4a^2 + 20a - 24$ — same sign, sum in middle

$-4(a^2-5a+6)$

$-4(a-3)(a-2)$

4. Factor: $x^3 + 8y^3$ $A=x$, $B=2y$

$A^3+B^3 = (A+B)(A^2-AB+B^2)$

$=(x+2y)(x^2-2xy+4y^2)$

5. Factor: $x^2 + 10x + 5$ — same sign, sum

$5 \cdot 1 \rightarrow 5+1 \neq 10$

try 2 binomials: ~~$(x+\ )(x+\ )$~~

prime

6. Factor: $x^2 + 7x - 3xy - 21y$

$x(x+7) - 3y(x+7)$ — $x+7$ is common to both "pieces"

$=(x+7)(x-3y)$

5:1 1:1

7. Factor: $5p^2 - 6p + 1$

$(5p-1)(p-1)$

no denominators (no bad pts)

8. Solve: $x^3 - 49x = 0$

$x(x^2-49)=0$

$x(x+7)(x-7)=0$

$x = 0, -7, 7$ ← "good" pts → solutions

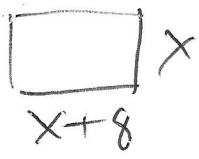
9. Solve: $x(x + 10) = -21$

$x^2+10x+21=0$

$(x+7)(x+3)=0$

$x=-7,-3$

10. A piece of carpet is 8 ft. longer than it is wide. The total area is 48 square feet. Find the dimensions.



$x(x+8)=48$

$x^2+8x-48=0$

$(x+12)(x-4)=0$

$x = -12, 4$ ft = width

$x+8 = 4+8 = 12$ ft = length

11. For the function $g(x) = x^2 - 2x$, find each of the function values below:

a) g(-5) $g(-5)=(-5)^2-2(-5)=25+10=35$

b) g(0) $g(0)=0^2-2(0)=0$

c) g(3) $g(3)=3^2-2(3)=9-6=3$