Review Unit 3 (This worksheet bares no grades, but it is your resource to SA3)

Factor Completely

1. $16xy+4x+4y+1$

2. $(x+3)^2-3x(x+3)$

3. $(x^4-1)+(x-1)(x^3-1)$

4. $4x^2+12xy+9y^2-8x-12y-5$

5. $x^3+4x^2-16x-64$

6. $(1-y)^2+x+y-xy-y^2$

7. $(2x+3)^2-y(2x+3)-2y^2$

8. $3(x+1)^2-4(y+1)^2+4xy+4x+4y+4$

9. $a^3-a-b+b^3$

10. $a^4-2ab^3+2a^3b-b^4$

Use long division to find quotients and remainders

11. $(x^3-2x+1)\div(x-x^2)$

12. $(x^4+3x^3+5x^2-7)\div(x^2+2x+1)$

13. $(x^6-2x+2)\div(-x^2+2)$

Use synthetic division to find remainders

14. $(3x^3+\frac{1}{2}x^2+5x-9)\div(2x-1)$

15. $(4x^4-15x^3+6x^2-7x+1)\div(x-2)$

16. $((3x^3-2x^2+6x+5)\div(3x-5)$

Evaluate the function:

$f(x)=x^4-3x^2+2x^3-1$

17. $f(-3)$

18. $f(2)$

19. $f(-\frac{1}{2})$

20. Given $g(x)=16x^4+4ax^3-12bx^2-5x-1$

(a) if remainder of $g(x)\div(x-1)$ is 14 and (x+1) is a factor of g(x). Find a and b

(b) verify that (4x+1) is a factor of g(x)

(c) use what you learned from (a) and (b) find all zeros for g(x)

21. Solve the following equations: assume all unknowns are real numbers.

(a) $4\cdot 8^{x+1}=256$

(b) $3^x\cdot 6^{y-2}=2^{3+2x}\cdot 3^{2y+1}$

(c) $\frac{18^x}{4^y}=12^{2+4y}$

22. $m(x)=2x+1$, $n(x)=x^2+2x$

if $\begin{cases} f(x)+2g(x)=m(x)+n(x) \\ f(x)+4g(x)=3x^2-2x+5 \end{cases}$

and $h(x)=f(x)\cdot g(x)$

Find

(a) $f(x)$?

(b) $g(x)$?

(c) $h(x)$?

(d) $h(1)$?

(e) $h(2)$?