Math 410 Practice Test 4

1. Factor the polynomial.

   $$h^2(13+r)+2(13+r)$$

   a. $(h+2)(h-2)(13+r)$
   b. $\left(h^2+1\right)(26+2r)$
   c. $\left(h^2+13+r\right)(2+r)$
   d. $\left(h^2+13\right)(2+r)$
   e. $\left(h^2+2\right)(13+r)$

2. Factor the polynomial.

   $$-30p^2t^2-10pt^3$$

   a. $-20pt\left(6pt^2-7t\right)$
   b. $-20t^2\left(6p+7\right)$
   c. $-10pt^2\left(3p+1\right)$
   d. $-10t^2\left(6p^2+7t\right)$
   e. $-10pt^2\left(3p+1t\right)$

3. Factor the trinomial. If it can't be factored, select *prime*.

   $$u^2+3u-4$$

   a. $(u-4)(u+1)$
   b. $(u-4)(u-1)$
   c. $(u+4)(u-1)$
   d. $(u+4)(u+1)$
   e. prime

4. Factor the trinomial.

   $$-x^2+7x-6$$

   a. $-(x-2)(x+1)$
   b. $(x+6)(x-2)$
   c. $(x+2)(x+1)$
   d. $-(x-6)(x-1)$
   e. $-(x+6)(x+2)$

5. Completely factor the trinomial.

   $$m^2+4mn-45n^2$$

   a. $(m-8n)(m-5n)$
   b. $(m+9n)(m-8n)$
   c. $(m+9n)(m+8n)$
   d. $(m-8n)(m+5n)$
   e. $(m+9n)(m-5n)$

6. Factor the trinomial. If it can't be factored, select *prime*.

   $$5m^2-21m+4$$

   a. $(4m-5)(m+4)$
   b. $(5m-1)(m-4)$
   c. $(5m+1)(m-5)$
   d. $(5m-4)(m-1)$
   e. prime

7. Factor the trinomial. If it can't be factored, select *prime*.

   $$7y^2-27y+18$$

   a. $(7y+6)(y+3)$
   b. $(y-3)(y-6)$
   c. $(7y-6)(y-3)$
   d. $(7y+3)(y+6)$
   e. prime

8. Factor the trinomial. If it can't be factored, select *prime*.

$$-y^3 - 15y^2 - 14y$$

a. $-y(y - 14)(y + 1)$
b. $y(y + 14)(y - 1)$
c. $-y(y + 14)(y + 1)$
d. $-(y + 14)(y + 1)$
e. prime

9. Factor the polynomial.

$$t^2 + 18t + 81$$

a. $(t - 9)^2$
b. $(t - 2)^2$
c. $(t + 9)(t - 9)$
d. $(t + 9)^2$
e. $(t + 2)^2$

10. Factor the polynomial.

$$25 + 4x^2 + 20x$$

a. $(5x - 2)^2$
b. $(5x + 2)^2$
c. $(5x - 2)(5x + 2)$
d. $(2x + 5)^2$
e. $(2x - 5)^2$

11. Factor the polynomial. If it can't be factored, select *prime*.

$$64x^3 + 16x^2 + x$$

a. $(8x^2 + 1)^2$
b. $x(x + 8)^2$
c. $x(8x + 1)^2$
d. $x(8x - 1)^2$
e. prime

12. Factor the polynomial. If it can't be factored, select *prime*.

$$36 - y^2$$

a. $(1 - 6y)(1 + 6y)$
b. $(6 - y)(6 + y)$
c. $(6 + y)^2$
d. $(6 - y)^2$
e. prime

13. Factor the polynomial. If it can't be factored, select *prime*.

$$-4 + v^2$$

a. $(v - 2)^2$
b. $(1 + 2v)(1 - 2v)$
c. $(v + 2)(v - 2)$
d. $(v + 2)^2$
e. prime

14. Factor completely.

$$3y^3 + 3$$

a. $3(y + 1)(y^2 - y + 1)$
b. $3(y - 1)(y^2 + y + 1)$
c. $(y + 1)(y^2 + y + 1)$
d. $(3y + 3)(y^2 + y - 1)$
e. $(y - 1)(3y^2 - 3y + 3)$

15. Factor $x^3 + 2x^2 - 36x - 72$ completely.

a. $(x + 6)(x - 6)(x + 2)$
b. $x^2(x + 2) - 36(x + 2)$
c. $(x^2 - 36)(x + 2)$
d. $(x + 6)(x - 6)(x + 2)(x - 2)$

16. Solve the equation.

    $(x - 5)(x + 1)(x - 2) = 0$

    a. $5, -1, 2$
    b. -1
    c. $5, 1, 2$
    d. $5, 2$
    e. $-5, 1, -2$

17. Solve the equation.

    $x^2 - 25 = 0$

    a. $-5, 5$
    b. $5, -4$
    c. $-25, 5$
    d. $-5, 4$
    e. 25

18. Solve the equation.

    $2x^2 - 9x = 26$

    a. $-2, 2$
    b. $-\dfrac{13}{2}, \dfrac{13}{2}$
    c. $\dfrac{13}{2}, -2$
    d. $-\dfrac{13}{2}, 2$
    e. $0, -\dfrac{13}{2}, 2$
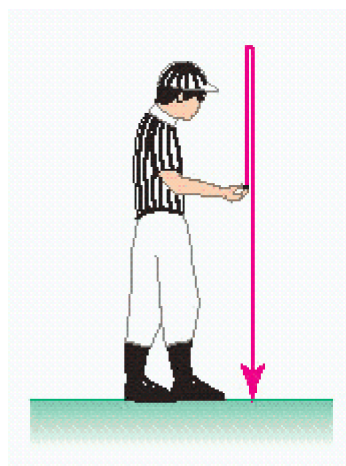
19. Solve the equation.

    $(3s + 14)(s + 1) = -10$

    a. $\dfrac{8}{3}, -3$
    b. $-\dfrac{5}{3}, -3$
    c. $\dfrac{5}{3}, -3$
    d. $\dfrac{8}{3}, 3$
    e. $-\dfrac{8}{3}, -3$

20. Before a football game, a coin toss is used to determine which team will kick off. The height h (in feet) of a coin above the ground t seconds after being flipped up into the air is given by $h = -16t^2 + 22t + 3.$

    How long does a team captain have to call heads or tails if it must be done while the coin is in the air?

    Give the answer to one decimal place, if necessary.

    _____ sec

21. The height of a triangle is 3 feet less than the length of the base. If the triangle has an area of 35 square feet, find the height of the triangle.

    _____ feet

22. Factor completely.

    $8x^3 + y^3$

23. Factor completely.

    $x^3 - 8$

24. Factor completely.

    $64 - y^3$

25. Factor $x^4 - 7x^2 - 18$ completely.

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Math 410 Practice Test 4
Answer Section

1. E
2. E
3. C
4. D
5. E
6. B
7. C
8. C
9. D
10. D
11. C
12. B
13. C
14. A
15. A
16. A
17. A
18. C
19. E
20. 1.5
21. 7
22. $\left(2x+y\right)\left(4x^2-2xy+y^2\right)$
23. $(x-2)\left(x^2+2x+4\right)$
24. $\left(4-y\right)\left(16+4y+y^2\right)$
25. $(x-3)(x+3)\left(x^2+2\right)$