Hon Pre-Calculus
Quiz Algebra Review

Name [redacted]

45/50

Show All Work!!!! No Calculators!!! Circle All Final Answers!!!

Short Answer

1. Factor Completely.:

$16b^2+60b-100$

$4(4b^2+15b-25)$

$4(4b^2+20b-5b-25)$

$4(4b(b+5)-5(b+5))$

$4(4b-5)(b+5)$

2. Factor Completely.:

$343b^2-7b^4$

$7b^2(49-b^2)$ −1

$7b^2(7+b)(7-b)$

3. Factor Completely.:

$x^{2n}+9x^n-10$

$(x^n-1)(x^n+10)$

4. Factor Completely.:

$5nu^8-15nu^4+40n$

$5n(u^8-3u^4+8)$

$5n(u^8-3u^4+8)$

$5n(u^8-3u^4+8)$

5. Factor Completely.:

$5x^4-9x^2+4$

$5x^4-5x^2-4x^2+4$

$5x^2(x^2-1)-4(x^2-1)$ −1

$(5x^2-4)(x^2-1)$

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

6. Factor Completely.:

$16x^2c+8xyd-16x^2d-8xyc$

$16x^2c-16x^2d-8xyc+8xyd$

$16x^2(c-d)-8xy(c-d)$

$(16x^2-8xy)(c-d)$

$8x(2x-y)(c-d)$

−2

7. Factor Completely.:

$x^9+x^6-x^3-1$

$x^6(x^3+1)-1(x^3+1)$

$(x^6-1)(x^3+1)$

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

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

8. Solve:

$10n^2-35=65n$

$10n^2-65n-35=0$

$2n^2-13n-7=0$

$2n^2-14n+n-7=0$

$2n(n-7)+1(n-7)=0$

$(2n+1)(n-7)=0$

$n=-\frac{1}{2},\ n=7 \quad \{-\frac{1}{2}, 7\}$

9. Solve by completing the square:

$4n^2+4n=-24$

$n^2+n=-6$

$n^2+n+\frac{1}{4}=-\frac{24}{4}+\frac{1}{4}$

$\sqrt{(n+\frac{1}{2})^2}=\sqrt{-\frac{23}{4}}$

$n+\frac{1}{2}=\pm\frac{\sqrt{-23}}{2}$

$n=-\frac{1}{2}\pm\frac{i\sqrt{23}}{2}$

$n=\frac{-1+i\sqrt{23}}{2},\ \frac{-1-i\sqrt{23}}{2}$

10. Solve using the quadratic formula:

$9x^2-11=6x$

$9x^2-6x-11=0$

$x=\frac{6\pm\sqrt{(6)^2-4(9)(-11)}}{18}$

$x=\frac{6\pm\sqrt{36+396}}{18}$

$x=\frac{6\pm\sqrt{432}}{18}$

$=\frac{6\pm12\sqrt{3}}{18}$

$=\frac{6}{18}\pm\frac{12\sqrt{3}}{18}$

$x=\frac{1\pm2\sqrt{3}}{3} \quad \{\frac{1+2\sqrt{3}}{3}, \frac{1-2\sqrt{3}}{3}\}$

11. Simplify the following completely:

$\frac{\frac{1}{2}-\frac{x+5}{4}}{\frac{2x^2}{2}-\frac{5}{2}10}=\frac{\frac{2-(x+5)}{4}}{\frac{2x^2-10}{4}}$

$=\frac{2-(x+5)}{4}\cdot\frac{4}{2x^2-10}$

$=\frac{2-(x+5)}{2(x^2-5)}$

$=\frac{2-x-5}{2(x^2-5)}$

$\frac{-x-3}{2x^2-10}$

12. Solve over the reals:

$4x^2+4x-8=1$

$+8 \quad +8$

$4x^2+4x=9$

$x^2+x+\frac{1}{4}=\frac{9}{4}+\frac{1}{4}$

$\sqrt{(x+\frac{1}{2})^2}=\sqrt{\frac{5}{2}}$

$x+\frac{1}{2}=\pm\sqrt{\frac{5}{2}}$

$x=-\frac{1}{2}\pm\sqrt{\frac{5}{2}}$

$\{-\frac{1}{2}+\sqrt{\frac{5}{2}}, -\frac{1}{2}-\sqrt{\frac{5}{2}}\}$

-8

$\frac{x^b}{x^c} = x^a$

13. Solve over the reals:

$$\frac{81^{3n+2}}{243^{-n}} = 3^4$$

$$\frac{(3^4)^{3n+2}}{3^{(5)(-n)}} = 3^4$$

$$\frac{3^{12n+8}}{3^{-5n}} = 3^4$$

$$3^{(12n+8)+5n} = 3^4$$

$17n + 8 = 4$

$-8 \quad -8$

$\frac{17n}{17} = \frac{-4}{17}$

$n = \frac{-4}{17}$

14. Solve over the reals:

$$\frac{1}{6}^{3x+2} \cdot 216^{3x} = \frac{1}{216}$$

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

$$6^{-3x-2} \cdot 6^{9x} = 6^{-3}$$

$$6^{6x-2} = 6^{-3}$$

$6x - 2 = -3$

$\frac{6x}{6} = \frac{-1}{6}$

$x = -\frac{1}{6}$

15. $\log_4(x^2-3) + \log_4 10 = 1$

$\log_4 10x^2 - 30 = 1$

$4 = 10x^2 - 30$

$+30 \quad +30$

$\frac{34}{10} = \frac{10x^2}{10}$

$\sqrt{x^2} = \sqrt{\frac{17}{5}}$

$x = \pm\sqrt{\frac{17}{5}}$

-1

16. Solve for x over the reals:

$$\ln(4x+1) - \ln 3 = 5$$

$\ln \frac{4x+1}{3} = 5$

$3e^5 = \frac{4x+1}{3}$ (3)

$3e^5 = 4x + 1$

$\frac{3e^5 - 1}{4} = \frac{4x}{4}$

$x = \frac{3e^5 - 1}{4}$

-1