Gateway Exam #1 Practice Problems
Working with Fractions

1. A common denominator of $\frac{1}{x}$ and $\frac{x}{4}$ is:

   (a) $x + 4$
   (b) x
   (c) 4
   (d) $4x$
   (e) $x + 1$

2. A common denominator of $\frac{a+1}{b}$ and $\frac{1}{ab}$ is:

   (a) a
   (b) b
   (c) $a + 2$
   (d) $a^2 + ab$
   (e) ab

3. A common denominator of $\frac{x}{1}$ and $\frac{1}{x^2}$ is:

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

4. A common denominator of $\frac{3}{4}$ and $\frac{1}{4(x+1)^2}$ is:

   (a) $4(1 + x)^2$
   (b) $5 + x^2$
   (c) $x^2 + 4x + 4$
   (d) $4x^2 + 4$
   (e) $(x + 1)^2$

5. A common denominator of $\frac{x}{x+1}$ and $\frac{x+1}{x}$ is:

   (a) $x^2 + 1$
   (b) $x(x + 1)$

(c) $2x + 1$

(d) x^2

(e) $(x + 1)^2$

6. If you reduced the expression $\frac{1}{x} + \frac{x}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x+1}{2x+1}$

(b) $\frac{3}{2}$

(c) $\frac{x^2+x+1}{x(x+1)}$

(d) $\frac{2}{3}$

(e) $\frac{x^2}{x+1}$

7. If you reduced the expression $\frac{a}{b} + \frac{b}{a}$ to a single fraction you could obtain:

(a) 1

(b) 2

(c) $\frac{a+b}{ab}$

(d) $\frac{a^2+b^2}{ab}$

(e) $\frac{ab}{a+b}$

8. If you reduced the expression $\frac{1}{2} + \frac{1}{a}$ to a single fraction you could obtain:

(a) $\frac{1}{2a}$

(b) $\frac{2}{a}$

(c) $\frac{1}{2+a}$

(d) $\frac{2}{2+a}$

(e) $\frac{a+2}{2a}$

9. If you reduced the expression $\frac{1}{x^2} + \frac{x^2}{x+1}$ to a single fraction you could obtain:

(a) $\dfrac{x^4+x+1}{x^2(x+1)}$

(b) $\dfrac{1+x^2}{x^2(x+1)}$

(c) $\dfrac{x^2+x+1}{x(x+1)}$

(d) $\dfrac{1+x^2}{x^2+x+1}$

(e) $\dfrac{x^2}{x+1}$

10. If you reduced the expression $\dfrac{a^2}{3}+\dfrac{3}{a}$ to a single fraction you could obtain:

(a) a

(b) $\dfrac{a^3+9}{3a}$

(c) $\dfrac{3a^2}{3+a}$

(d) $\dfrac{a^2+3}{3+a}$

(e) $\dfrac{a^2+3}{3a}$

11. If you reduced the expression $a-\dfrac{1}{a}$ to a single fraction you could obtain:

(a) $\dfrac{a-1}{a}$

(b) $\dfrac{1-a}{a^2}$

(c) $\dfrac{a^2-1}{a}$

(d) $\dfrac{1}{a^2}$

(e) The given quantities cannot be combined into a single fraction.

12. If you reduced the expression $\dfrac{1}{x}-\dfrac{1}{x+1}$ to a single fraction you could obtain:

(a) 0

(b) $\dfrac{0}{-1}$

(c) $\dfrac{x^2-1}{x(x+1)}$

(d) $\dfrac{1}{-1}$

(e) $\dfrac{1}{x(x+1)}$

13. If you reduced the expression $\dfrac{2}{x+1} - \dfrac{1}{x+1}$ to a single fraction you could obtain:

(a) $\dfrac{1}{2x+2}$

(b) $\dfrac{1}{0}$

(c) $\dfrac{x^2+x+1}{x+1}$

(d) $\dfrac{1}{x+1}$

(e) $\dfrac{2x^2+2}{x+1}$

14. If you reduced the expression $\dfrac{x+1}{x} - \dfrac{2}{x+1}$ to a single fraction you could obtain:

(a) $\dfrac{x^2+1}{x(x+1)}$

(b) $\dfrac{x-1}{x(x+1)}$

(c) $\dfrac{x^2+x+1}{x(x+1)}$

(d) $\dfrac{x^2+2x-1}{x(x+1)}$

(e) $\dfrac{x}{x+1}$

15. If you reduced the expression $\dfrac{a^2}{b} - \dfrac{b}{a}$ to a single fraction you could obtain:

(a) $\dfrac{a^2-b}{b-a}$

(b) $\dfrac{a^3-b^2}{ab}$

(c) $\dfrac{a^2-b}{ab}$

(d) $\dfrac{a^2b}{b-a}$

(e) $\dfrac{a^2+b}{b-a}$

16. If you reduced the expression $\frac{1}{x} \cdot \frac{x}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x}{2x+1}$

(b) $\frac{2x}{x+1}$

(c) $\frac{1}{x+1}$

(d) $\frac{1}{x^2+1}$

(e) $\frac{x^2}{x+1}$

17. If you reduced the expression $\frac{a^3}{1+b} \cdot \frac{1+b}{a^6}$ to a single fraction you could obtain:

(a) $\frac{(1+b)^2}{a^3}$

(b) $\frac{1}{a^3}$

(c) $\frac{a^3}{(1+b)^2}$

(d) $\frac{a^9}{(1+b)^2}$

(e) $\frac{a^3+b+1}{a^6+b+1}$

18. If you reduced the expression $\frac{\sqrt{x}}{x} \cdot \frac{x}{\sqrt{x}+1}$ to a single fraction you could obtain:

(a) $\frac{x+\sqrt{x}}{x+\sqrt{x}+1}$

(b) $\frac{x^{3/2}}{x^{3/2}+1}$

(c) $\frac{x+\sqrt{x}}{x(\sqrt{x}+1)}$

(d) $1+\frac{1}{\sqrt{x}}$

(e) $\frac{\sqrt{x}}{\sqrt{x}+1}$

19. If you reduced the expression $\frac{x-1}{x+1} \cdot \frac{x}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x}{2x+2}$

(b) $\dfrac{2x-1}{2x+1}$

(c) $\dfrac{x^2+x+1}{x(x+1)}$

(d) $\dfrac{x^2-x}{(x+1)^2}$

(e) $\dfrac{x}{x+1}$

20. If you reduced the expression $\dfrac{1}{x-1}\cdot\dfrac{x^2}{x+1}$ to a single fraction you could obtain:

(a) $\dfrac{x^2}{x^2-1}$

(b) $\dfrac{x^2+1}{x^2-1}$

(c) $\dfrac{1+x}{x^2-1}$

(d) $\dfrac{x^2-1}{x+1}$

(e) $\dfrac{x^2}{x+1}$

21. If you reduced the expression $\dfrac{\frac{1}{x}}{x}$ to a single fraction you could obtain:

(a) $\dfrac{1}{2x}$

(b) x^2

(c) 1

(d) $\dfrac{1}{x^2}$

(e) $\dfrac{x^2}{x+1}$

22. If you reduced the expression $\dfrac{\frac{a}{b}}{\frac{a}{b}}$ to a single fraction you could obtain:

(a) $\dfrac{a^2}{b^2}$

(b) $\dfrac{2a}{b}$

(c) $\dfrac{a}{b}$

(d) a^2b^2

(e) 1

23. If you reduced the expression $\frac{x^2}{\frac{1}{x}}$ to a single fraction you could obtain:

(a) x^3

(b) $\frac{1}{x^3}$

(c) x

(d) $\frac{1}{x}$

(e) $\frac{x^2}{x+1}$

24. If you reduced the expression $\frac{\frac{x+1}{x}}{x}$ to a single fraction you could obtain:

(a) $\frac{x+1}{2x}$

(b) $1+\frac{1}{x}$

(c) $\frac{x+1}{x^2}$

(d) 2

(e) $\frac{2}{x}$

25. If you reduced the expression $\frac{1+x}{\frac{1}{x^2}}$ to a single fraction you could obtain:

(a) $\frac{x+1}{2x+1}$

(b) x^2+x^3

(c) $\frac{x^2+x+1}{x+1}$

(d) $\frac{2x^2}{1+x}$

(e) $\frac{x}{x^2+x^3}$

26. Simplifying the expression $\frac{x^3-3x^2}{x}$ could produce:

(a) x^2-3x

(b) x^2-3x^2

(c) $-2x^2$

(d) x^3-3x

(e) $\frac{x}{x^3-3x^2}$

27. Simplifying the expression $\dfrac{\sqrt{x}(x-1)}{x^2-1}$ could produce:

(a) $x^{3/2}+1$

(b) x^2-1

(c) $\dfrac{1}{x+1}$

(d) $\dfrac{\sqrt{x}}{x+1}$

(e) $\dfrac{1}{\sqrt{x}-1}$

28. Simplifying the expression $\dfrac{x^3}{x+x^2}$ could produce:

(a) 1

(b) $\dfrac{x}{1+x}$

(c) x^2

(d) $\dfrac{1}{x}+x$

(e) $\dfrac{x^2}{1+x}$

29. Simplifying the expression $\dfrac{\frac{1}{x}+x}{x}$ could produce:

(a) $\dfrac{1}{x}+1$

(b) $\dfrac{1+x^2}{x^2}$

(c) $\dfrac{1}{x^2}+x$

(d) x^2+1

(e) $\dfrac{1}{x^2}-1$

30. Simplifying the expression $\dfrac{\sqrt{x}+x}{\sqrt{x}}$ could produce:

(a) $1+x$

(b) $2\sqrt{x}$

(c) $1+\sqrt{x}$

(d) x^2+1

(e) $x+\dfrac{1}{\sqrt{x}}$

Answers:

1.	d	2.	e	3.	b	4.	a	5.	b
6.	c	7.	d	8.	e	9.	a	10.	b
11.	c	12.	e	13.	d	14.	a	15.	b
16.	c	17.	b	18.	e	19.	d	20.	a
21.	d	22.	e	23.	a	24.	c	25.	b
26.	a	27.	d	28.	e	29.	b	30.	c