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MATH 100
Fall 2022
HW 11: Due 10/26

"The tax code is a monstrosity and there's only one thing to do with it: scrap it, kill it, drive a stake through its heart, bury it, and hope it never rises again to terrorize the American people."

– Steve Forbes

Problem 1. (10pt) Wyatt is filing his federal taxes. He is filing as a single individual taking the standard deduction of $2,400. Last year working as a CPA, he made $72,000. Find the amount he pays in federal taxes.

Taxable Income	Tax Owed
$0–$10,275	10% of taxable income
$10,276–$41,775	$1,027.50 + 12% amount over $10,275
$41,776–$89,075	$4,807.50 + 22% amount over $41,775
$89,076–$170,050	$15,213.50 + 24% amount over $89,075
$170,051–$215,950	$34,647.50 + 32% amount over $170,050
$215,951–$539,900	$49,335.50 + 35% amount over $215,950
$\geq$ $539,901	$162,718 + 37% amount over $539,900

Solution. After taking the standard deduction, Wyatt has $\$72000 - \$2400 = \$69600$ in taxable income. But then we have...

$$\text{Tax} = \$4807.50 + 0.22(\$69600 - \$41775) = \$4807.50 + 0.22(\$27825) = \$4807.50 + \$6121.50 = \$10929$$

Therefore, Wyatt will pay $10,929 in federal income taxes.

Problem 2. (10pt) Suppose that the CPI last year was \$296.808. This year, the CPI is \$301.21. What was the inflation rate from last year to this year? If a good cost \$95.99 last year, what do you predict that it will cost this year?

Solution. We have...

$$\frac{\$301.21}{\$296.808} = 1.01483 = 1 + 0.01483$$

Therefore, the inflation rate is 1.483%. But then if a good costs \$95.99 last year, we would predict this year that it costs...

$$\$95.99(1 + 0.01483) = \$95.99(1.01483) \approx \$97.41$$